341.248ERN 90/1

COUNCIL OF EUROPE
CONSEIL DE L'EUROPE

Strasbourg, 22 November 1990
[tpvs90ADD1_1A.]

T-PVS (90) 1
**ADDENDUM 1**

CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE AND NATURAL HABITATS

Standing Committee

---

## REVISION OF APPENDIX I

# SPECIES CONSERVATION SUMMARIES

**Non endemic species**

and

**Endemics for Austria, Germany, Hungary, Norway and United Kingdom**

prepared by

Vicky MORGAN and Christine LEON
(WCMC)

**This document will not be distributed at the meeting. Please bring this copy**
**Ce document ne sera plus distribué en réunion. Prière de vous munir de cet exemplaire**

A|N 11035

LIBRARY
World Conservation Monitoring Centre

## 8. SPECIES CONSERVATION SUMMARIES

### 8.1. PTERIDOPHYTA (Fern and fern allies)

Asplenium hemionitis L. IUCN Category

Europe: VULNERABLE
World: ?

PTERIDOPHYTA (Ferns) ASPLENIACEAE (Spleenwort family)

---

SUMMARY: A fern with leaves ranging from 15-20 cm in exposed situations to 45 cm in more shady locations, lamina palmately 5-lobed, to 20 cm wide, with the lobes acute and the central one longest. Spore-cases (sori) linear and parallel along the veins. A plant of rocky banks and walls, often on those which are man-made, its roots in need of a dep crevioce for successful growth. Confined to mainland Europe, Macaronesia and North Africa; in mainland Europe, only one site in Portugal, where it is Endangered. Present, but not common, in all islands of the Azores, Canaries and Madeira. In mainland Portugal threatened by possible collapse of an old wall on which it grows. In natural habitats the species is possibly threatened by collection for horticulture.

THREATS: Habitat degradation; possibly over-collecting.

ACTION PROPOSED:

1. Ensure habitat in single Portuguese site is adequately maintained.
2. Undertake a thorough survey of sites in Macaronesia.

SELECTED REFERENCES:

Dray, A.M. ((1985). Plantas a Proteger em Portugal Continental. Servico Nacional de Parques, Reservas e Conservacao da Natureza, Lisbon.
Jermy, C. Pers. Comm. 12/6/1990.
Ormonde. J. (in press). In: Press, J.R., Flora of Madeira. London.

## VIVIPAROUS CHAIN-FERN

3 Woodwardia radicans (L.) Sm. IUCN Category

Europe: VULNERABLE
World: ?

PTERIDOPHYTA (Ferns) BLECHNACEAE (Chain Fern family)

---

SUMMARY: A robust fern, with leaves up to 2.5 m long, arising from a short thick stem that remains close to the ground. The blade of each leaf comprises deeply toothed leaflets bearing, almost at their tips, young plantlets which eventually establish themselves independently as separate plants. The reproductive bodies (spores) are arranged in chain-like groups on the underside of the leaves. Chain-ferns must have their roots submerged in water or moist soil and are therefore normally found growing alongside rocky streams in steep-sided valleys or in scrubby more open valley floors where natural underground drainage channels provide the right environment. The main distributional centre for the species is the Atlantic Islands (Azores, Madeira and the Canary Islands) where it grows in remnant laurel forest, a critically threatened habitat which has been subject to much recent clearance and replacement with forestry plantations of Japanese Larch (Cryptomeria japonica). Remnant populations in northern Portugal and northern Spain. In the last 2 countries, re-afforestation and the building of extraction roads is causing both habitat loss and degradation. There are only 3 sites in Italy where the species is protected by provincial laws, and one in Sicily, but active management is needed if the species is to survive. The sole French site is in northern Corsica and unprotected, while the single population in western Crete is threatened by local agricultural development.

THREATS: Watercourse "improvement"; drainage; re-afforestation; road construction; agricultural development.

ACTION PROPOSED:

1. Establish protected areas for the species in all remaining localities.
2. Prohibit local drainage and water-course 'improvement' schemes that may exert a detrimental effect on the survival of the species.

SELECTED REFERENCES:

Barreno, E. (1984). Listado de Plantas Endemicas, Raras o Amenazadas de Espana. Informacion Ambiental, 3, XI. Especial Conservacionismo.
Caputo, G. and De Luca, P. (1968-69). Osservazioni sull'ecologia di Woodwardia radicans (L.) Sm. (Filicopsida, Blechnaceae) nelle stazioni relitte della Campania. Delphinoa, n.s., 10-11: 1-13.
Gardini Peccenini, S. (1984). Flora da Proteggere. Indagine su alcune specie vegetali minacciate o rare in Italia. Istituto di Botanico e Orto Botanico, Universita di Pavia. (Illus., maps.)
Jermy, C. Pers. Comm. 6/1990.

4 Culcita macrocarpa C.Presl IUCN Category

Europe: **VULNERABLE**
World: **VULNERABLE**

PTERIDOPHYTA (Ferns) DICKSONIACEAE (Bristle Tree-Fern Family)

---

SUMMARY: This robust and attractive fern, with shining green or yellow-gren leaves, is the only member of the tree-fern family (Dicksoniaceae) in Europe. This tree-fern is characterised by a short but often thick stem or trunk and leaves over 1 m long, although in open or degraded habitats they may be much smaller. The stem and young fronds are covered with long golden-brown hairs and are collected to make shaggy, lion-like artefacts which are widely sold to tourists. The sori (fruiting bodies) are located on the margins of the leaves but only a few leaves are fertile in most populations. Plants grow on steep slopes, often in deep sink-holes or narrow gorges, where humidity is maintained by natural high forest, dense laurel forest in the case of the Atlantic Islands. The species is confined to mainland Portugal and northern Spain (with an isolated population in Cadiz Province), and the Atlantic Islands. In the latter, it is on the verge of extinction in the laurel forests of the Canary Islands; it is also threatened in Madeira except on Montado do Pecegueiro where there are 200 plants; the plant's only remaining stronghold appears to be in the Azores.

THREATS: Clearance of native forests in the Atlantic Islands and the Iberian Peninsula; in Spain, native forests are being replaced by Eucalyptus plantations; exploitation for the tourist industry.

ACTION PROPOSED:

1. Prohibit exploitation of the species from the wild.
2. Establish protected areas in the more accessible sites of the species.
3. Protect laurel forest sites where the species grows from any further degradation or destruction.

SELECTED REFERENCES:

Gibby, M. (In press). In: Press, J.R., Flora of Madeira. London.
Jermy, C. Pers. Comm. 6/1990 (Natural History Museum, London.).
Salvo, E. Pers. Comm. 6/1990 (Natural History Museum, London.)
Sjogren, E. (1984). Azores Flora. Direccao Regional de Turismo, Horto Faial.

## BRISTLE-FERN/KILLARNEY FERN

ğ Trichomanes speciosum Willd. IUCN Category

Europe: VULNERABLE
World: ?

PTERIDOPHYTA (Ferns) HYMENOPHYLLACEAE (Filmy Fern family)

---

SUMMARY: The Bristle Fern is characterised by its membranous highly dissected leavs c. 10-40 cm long, arising from a creeping stem usually embedded in sandstone or similar porous rock fissures. Its fragile habit demands a highly specific micro-climate high in humidity and the species is therefore confined to dark crevices and gullies in deep and narrow wooded valleys in areas of high rainfall. It is also dependent upon a constantly flowing water source. In France (Pyrenees) and Ireland it has become established in isolated man-made wells or mine-shafts. The Bristle Fern also grows in Italy, Macaronesia, Spain and the U.K. and where throughout it is threatened by deforestation and the drying out of water courses. An additional threat in northern Spain is the encroachment of Eucalyptus plantations. Now believed extinct in Portugal. In Italy a single population survives in thew Apuane Alps of the north. In the past, this attractive fern was highly sought after to adorn the sitting rooms of Victorian England and elsewhere in Europe. This has lead to its abundance in botanic gardens, although the origin of most of this material is usually so obscure as to render it of little scientific or conservation value.

THREATS: Deforestation; drying out of small water courses; spread of Eucalyptus plantations.

ACTION PROPOSED: Establish protected areas for remaining populations in each Member State, and ensure that management in these areas ensures the maintenance of the specialised micr-climate that this species demands.

SELECTED REFERENCES:

Aymonin, G.G. (ed.) (1988). Connaitre les Plantes Protegees. Regions Ouest -Nord-Est. La Federation Francaise des Societes de Protection de la Nature.
Curtis, T.G.F. and McGough, H.N. (1988). The Irish Red Data Book. 1 Vascular Plants. Wildlife Service Ireland.
Jermy, A.C. Pers. Comm. 6/1990.
Le Duc, J.P. and Raffin, J.P. (eds) (1986). Connaitre les Plantes Protegees. Alpes-Massif Central. La Federation Francaise des Societes de Protection de la Nature.
Perring, F.H. and Farrell, L. (1983), 2nd ed. British Red Data Books: 1. Vascular Plants. Royal Society for Nature Conservation.

13 Marsilea batardae Launert

IUCN Category

Europe: **VULNERABLE**
World: **VULNERABLE**

PTERIDOPHYTA (Ferns)

**MARSILEACEAE** (Clover-Fern family)

---

SUMMARY: A fern with a leaf of 4 equal lobes, 5-15 mm long, with a rounded or scalloped outer margin and a wedge-shaepd base attached to a aslender petiole 2-20 cm long and resembling clover (Trifolium spp.), arising from a short creeping stem. Spores in complex nut-like structures (sporocarps), 3-5 mm long, attached to the base of the petiole, the whole persisting through the summer drought when the many leaves die. A species of seasonal streams in mid and south Portugal, and adjacent Spain. Pollution from farm waste and eutrophication threatens such habitats as do engineering developments which influence ground water drainage.

THREATS: Agricultural pollution; interference in drainage regime.

ACTION PROPOSED:

1. Select populations for close and constant monitoring and manage so as to maintain viability.
2. Maintain the species *ex situ*, bulk up and distribute to other botanic gardens.

SELECTED REFERENCES:

Derrick, L.N., Jermy, A.C. and Paul, A.M. (1987). Checklist of European Pterodophytes. Sommerfeltia 6.
Jermy, C. Pers. Comm. 6/1990.
Launert, E. (1983). A new species of Marsilea from Portugal. Bol. Soc. Brot., ser.2, 56: 99-104.

Taxonomic note: Described since publication of Flora Europaea (Launert, 1983). Recognised as good taxonomic species in Jermy (1987) and the Med-Checklist, volume 1 (1984).

14 Marsilea quadrifolia L. IUCN Category

Europe: VULNERABLE
World: ?

PTERIDOPHYTA (Ferns) MARSILEACEAE (Clover-leaf Fern family)

---

SUMMARY: A semi-aquatic fern similar in appearance and habitat preference to Marsilea azorica (see summary). M. quadrifolia, however, has a much larger distribution having been recorded from no less than 15 European countries but in which the species is rare or threatened in all. In the F.R.G. the species has already become extinct. Of these 15 countries, the following are Member States: Austria, France, Hungary, Italy, Portugal, Spain, Switzerland and Turkey. Marsilea quadrifolia also occurs in the Azores and the Canary Islands. In the F.R.G. the species has already become extinct, probably due to drainage and other agricultural 'improvements'.

THREATS: Probably drainage and eutrophication due to agricultural 'improvements'.

ACTION PROPOSED:

Proposals awaited.

SELECTED REFERENCES:

Barreno, E. (ed.) (1984). Listado de Plantas Endemicas, Raras, o Amenazadas de Espana. Informacion Ambiental, 3. (Conservacionismo en Espana).
Niklfeld, H. (ed.) (1986). Rote Listen Gefahrdeten Pflanzen Osterreichs. Bundesministeriums fur Gesundheit und Umweltschutz.

Turkey: no collection known from Tu (Ekim et al. pers. comm 26/6/92).

## HAIRY CLOVER FERN

15 Marsilea strigosa Willd. **IUCN Category**

Europe: **VULNERABLE**
World: **VULNERABLE**

PTERIDOPHYTA (Ferns) MARSILEACEAE (Clover-Fern family)

---

SUMMARY: This Clover-Fern, as its name suggests, has long-stalked leaves of four wedge-shaped hairy leaflets, arising from a short creeping stem growing along the soil surface. The stem also bears lentil-sized pods containing reproductive spores protected by a thick horny pod. This is a semi-aquatic fern whose habitat is seasonally wet hollows in maquis scrub and in rock depressions on basalt and schistose gneiss. A species mainly confined to the Mediterranean, M. strigosa has adapted itself to the long dry summers by losing its leaves and encasing its vulnerable spores within a thick horny pod which awaits the oncoming winter rains before dehiscing. Its European distribution is confined to three Member States (France, Italy and Spain). The Italian populations are restricted to only a few localities in the south-east and on Sardinia; the only Spanish population is restricted to Menorca where it is threatened by tourist developments; in France too only one locality is believed to exist, near Herault. In the latter, although a nature reserve, lack of management is allowing other persistent marsh plants to take over. The species is also threatened outside Europe: the Algerian and Moroccan populations total only 50 individuals between them, while the species is also recorded as declining in Egypt and the European USSR.

THREATS: Tourism; competetion from other aggressive aquatic plant species.

ACTION PROPOSED:

Proposals awaited.

SELECTED REFERENCES:

Jermy, A.C. Pers. Comm. 6/1990.

Taxonomic note: Recognised as a good species in FE. Although the species is recorded in FE as present in Portugal too, the identification of these populatons and others in western Spain have since been attributed to a closely related species called Marsilea batardae, confined exclusively to that area Jermy, 1990).

## _Pilularia minuta_ Durieu ex A.Braun

IUCN Category

Europe: ENDANGERED/VULNERABLE
World: ?

PTERIDOPHYTA (Ferns)

MARSILEACEAE (Clover-Leaf family)

---

_SUMMARY_: A very small atypical fern species with rush-like cylindrical leaves, 1-2.5 cm high, arising from a creeping green rhizome and distinguished in young growth by the unfurling rolled-up tip. Spores in hard nut-like capsules (sporocarps) attached to the base of the leaf. In seasonally wet usually clay hollows, obviously able to withstand summer drought. Its habitat is often vulnerable to rubbish tipping and other forms of pollution, including eutrophication. Its European distribution is completely confined to the Member States (with the exception of Yugoslavia) where it has been recorded as rare or threatened in all countries: France (including Corsica), Greece, Portugal, Spain (including the Balearic Islands), Sardinia and Sicily. The species also occurs in parts of North Africa where its status is not known. The species has become extinct in the Alpes Maritimes in France, the only remaining French populations surviving in the Departement of l'Herault (near Montpellier) and in a few coastal localities in southern Corsica, although these may be threatened by urban development.

_THREATS_: Eutrophication; drainage; urban development.

_ACTION PROPOSED_:

1. Undertake a full field survey to identify the sites of the remaining populations of this extremely rare fern and establish appropriate conservation measures as soon as possible.

_SELECTED REFERENCES_:

Aymonin, G.G. (1988). _Les Plantes Protegees. Region Mediterraneenne_. La Federation Francaise des Societes de Protection de la Nature, Delachaux and Nestle.
Barreno, E. (1984). Listado de Plantas Endemicas, Raras o Amenazadas de Espana. _Informacion Ambiental_, 3, XI.
Dray, A.M. (1985). _Plantas a Proteger em Portugal Continental_. Servico Nacional de Parques, Reservas e Conservacao da Natureza.
Jermy, A.C. Pers. Comm. 6/1990.
Prelli, R. Pers. Comm. 1990.
Preston, C.D. Pers. Comm. 1988.

17 Botrychium matricariifolium A. Braun ex Koch IUCN Category

Europe: VULNERABLE
World: ?

PTERIDOPHYTA (Ferns) OPHIOGLOSSACEAE (Adder's-tongue family)

---

SUMMARY: A small but distinctive fern whose aerial parts comprise a single leaf in 2 parts; one a typical pinnately lobed blade with the other an erect inflorescence-like cluster of sporangia, resembling grapes. Each plant spends part of its life-cycle as an underground tuber-like prothallus, which is whlly dependent on its relationship with a soil fungus for its nutrients. B. matricariifolium is a plant of grassland used for grazing and/or haymaking, of woodland and open scrub, and of coastal grassland. It is rather spasmodic in its appearance at many sites, probably favouring wet summers, and therefore it is difficult to be certain of its status and distribution. The species has a disjunct amphi-atlantic distribution and is found in Europe, North America and Patagonia. In western Europe the species has certainly declined, and it is now Extinct in Belgium and the Netherlands, and rare or threatened in Austria, Italy, Norway, Sweden and Switzerland.

THREATS: Ceasing of grazing, leading to overgrowth of rough vegetation; drainage; afforestation; fertiliserapplication.

ACTION PROPOSED:

1. Ensure traditional land-use and other agricultural practices are maintained at key sites including appropriate grazing levels and the prohibition of fertilisers and drainage operations.
2. Woodland sites should be protected from clear-felling and managed sensitively to ensure the survival of the remaining populations.

SELECTED REFERENCES:

Hulten, E. (1958), (reprint 1973). The amphi-atlantic plants. Kungliga Vetenskapsakademins handlingar, 4th ser., vol. 7, no. 1.
Jermy, A.C. Pers. Comm. 6/1990.
Ingelog, T. Pers. Comm. 6/1990.
Kommission for skydd av hotade djur och vaxter i Finland. (1985). Uhanalaisten elainten ja kasvien suojelutoimikunnan mietinto. III Uhanalaiset kasvit. Miljoministeriet, Helsinki.
Muller, S. (1986). Botrychium matricariifolium (Retz.) A. Braun ex Koch dans les pelouses sableuses du Pays de Bitche (Vosges du Nord). Bull. Soc. Bot. Fr., 133, Lettres bot., 1986 (2): 189-197.
Niklfeld, H. (ed.) (1986). Rote Listen Gefahrdeten Pflanzen Osterreichs. Bundesministerium fur Gesundheit und Imweltschutz, Vienna.

## 18 *Botrychium simplex* Hitchc.

IUCN Category

Europe: VULNERABLE
World: ?

PTERIDOPHYTA (Ferns and fern allies)

OPHIOGLOSSACEAE (Moonwort family)

---

**SUMMARY**: *B. simplex* is a small but distinctive fern about 15 cm tall, consisting of a single divided green "leaf" and a fertile spike which bears the spores. Like all ferns, it also has a "gametophyte" or prothallus stage in its life-cycle, during which time it is an underground tuber-like structure, living in association with soil fungi, gaining minerals and energy from organic matter in the soil. Its habitat is 'unimproved' grazed grassland, often along sea and lake shores on moist and sandy soil. Perhaps it is because of its dependence on soil microflora that it is so sensitive to any changes in its habitat such as fertiliser application and drainage. The number of visible plants in a population varies greatly from year to year, with the largest numbers being seen in wet summers. In Europe, *Botrychium simplex* is rare, threatened or extinct in all 10 Member States in which it has been recorded. Today the species is Extinct in Austria, F.R.G. and Norway, and is on the verge of extinction in France (including Corsica), Denmark, Sweden and Switzerland. In all other European countries (Finland, Iceland and Italy) only tiny populations remain. Although the range of the species extends to Japan and North America its status there is not known.

**THREATS**: Undergrazing; drainage; application of fertilisers; forestry.

**ACTION PROPOSED**:

1. Promote field survey work to identify key sites for protection;
2. Ensure that traditional grazing regimes are sustained in all known sites while prohibiting drainage and afforestation programmes and the application of fertilisers.

**SELECTED REFERENCES**:

Hulten, E. (1958, reprint 1973). The amphi-atlantic plants. *Kungliga vetenskapsakademinens handlingar*, 4th ser., vol. 7, no. 1.
Ingelog, T. Pers. Comm. 11/1989.
Lojtnant, B. and Worsoe, E. (1977). *Forelobig Status over den Danske Flora*. Botanical Institute, Aarhus University.
Nilsson, O. and Gustafsson, L.-A. (1978). Project Linné Rapporterar 80-92. *Svensk. Bot. Tidskr*. 72: 192-193.

19 Ophioglossum polyphyllum A.Braun

IUCN Category

Europe: VULNERABLE
World: ?

PTERIDOPHYTA (Ferns) OPHIOGLOSSACEAE (Adder's-Tongue family)

---

SUMMARY: Ophioglossum polyphyllum, as its family name suggests, has a distinctive appearance whose small leaves are thought to resemble an adder's tongue. The aerial parts of each plant comprise simply 2 parts, an entire ovate blade, 2-6 cm long and a fertile part in which the 15-30 sporangia are fused in a linear spike-like organ. Confined exclusively to the island of Tenerife in the Canary Islands and a single site on mainland Portugal, although in the latter the species may already be extinct. The plant's habitat is sandy damp pasture, drying out in the summer months. Trampling by stock, over-grazing and various land-use changes are the main causes of the plant's decline.

THREATS: Over-grazing; land-use change.

ACTION PROPOSED:

1. Undertake field survey to investigate the extent of remaining populations and carry out appropriate follow-up conservation measures.

SELECTED REFERENCES:

Derrick, L.N., Jermy, A.C. and Paul, A.M. (1987). Checklist of European Pteridophytes. Sommerfeltia, vol.6, 94 pp.
Jermy, A.C. Pers. Comm. 6/1990.

Taxonomic note: Not included in the Flora Europaea, but recognised as a 'good species' in the Med-Checklist (vol.1, 1984) and in Derrick (1987). Synonyms: Ophioglossum regulare (Schlecht.) C. Chr., O. capense Swartz var. regulare Schlecht., O. capense sensu auct.

20 Salvinia natans (L.) All.

IUCN Category

Europe: VULNERABLE
World: NOT THREATENED

PTERIDOPHYTA (Ferns)

SALVINIACEAE (Water-Fern family)

---

SUMMARY: Salvinia natans is a very distinctive free-floating species of fern. It can easily be identified by its slender branching stems with ovoid leaves 10-15 mm long, the upper surface of which are covered in long papillae, giving the species a softly hairy appearance. Its reproductive sori hang in tiny clusters beneath the leaf and water surface. Although the species has a wide distribution throughout Europe, it has declined dramatically in recent years to the point where it is now threatened or extinct in 11 European countries of which 9 are Member States: Belgium, France, F.R.G., Greece, Hungary, Italy, Netherlands, Spain, Turkey). Spain is the only Member State where the species is not under threat. The species also occurs in the USSR and as far east as India. As an aquatic species, S. natans has declined due to water pollution and eutrophication. Often confined to small bodies of water, it's habitat is also particularly vulnerable to in-filling by farmers or becoming overgrown by surrounding vegetation.

THREATS: Water pollution; in-filling of small ponds; competition from surrounding vegetation.

ACTION PROPOSED:

1. Undertake a field survey to evaluate the size and numbers of the remaining populations.
2. Identify key sites for priority protection and introduce controls on local land-use to ensure the habitat of the species does not deteriorate.
3. Examine the possibilities for habitat restoration and re-establishment of S. natans and undertake follow-up action where appropriate.

SELECTED REFERENCES:

Ekim, T. et al. (1989). List of Rare, Threatened and Endemic Plants in Turkey. Turkish Association for Conservation of Nature and Natural Resources, Ankara.
Jermy, A.C. Pers. Comm. 6/1990.
Mennema, J., Quene-Boterenbrood, A.J. and Plate, C.L. (1980). Atlas of the Netherlands Flora. 1: Extinct and Very Rare Species. Junk, The Hague.

Turkey. Not threatened (Ekim et al. pers comm 26/6/90)

## 8.2. ANGIOSPERMAE (Flowering Plants)

## 23 Alisma wahlenbergii (Holmberg) Juz.*

IUCN Category

Europe: **VULNERABLE**
World: **INDETERMINATE**

ANGIOSPERMAE (Flowering plants)

ALISMATACEAE (Water-plantain family)

---

SUMMARY: This is a small, short-lived perennial aquatic, with narrow submerged leaves, and small white flowers. Confined to northern Europe, its centre of distribution is in Finland, where the species is still quite common around the town of Oulu, near the northern coast of the Gulf of Bothnia. Last seen in southern Finland in 1856. Elsewhere, known only from the USSR and Sweden, where in the latter, a single population of c.1000 individuals grows in Lake Mälaren, near Stockholm; this site is protected. The plant's preferred habitat is shallow, sheltered, brackish pools in coastal meadows, over stony, clay or sand substrates; also found in eutrophic lakes. A weak competitor often confined to gaps in taller vegetation, it benefits from moderate grazing levels. Protected by law in Finland and Sweden but is, nevertheless, threatened by road and harbour building, as well as the construction of summer cottages. Partly threatened by geological uplift in the Oulu region.

THREATS: Water pollution; undergrazing; competition from other plants; road building; dredging of waterways.

ACTION PROPOSED:

1. Protect all sites from habitat damage, including pollution and neglect. Improve water quality at those sites already polluted.
2. Carefully monitor all localities, and promote re-establishment of new populations in areas of geological uplift.
3. Propagate cultivated material, store seed for future re-introductions, if appropriate.

SELECTED REFERENCES:

Alanen, A. Pers. Comm. 3/1990.
Björkqvist, I. (1967). Studies in Alisma L. I: distribution, variation and germination. Opera Botanica, 17: 1-128.
Borodin, A.M. et al. (Eds)(1984). Red Data Book of the USSR. Rare and Endangered Species of Animals and Plants, Ed. 2. Lesnaya Promyshlennost, Moscow.
Erkamo, V. (1942). Alisma gramineum Gmel. ssp. Wahlenbergii Holmb. auf der Karelischen Landenge. Memoranda Soc. Fauna Flora Fennica, 18: 102-104.
Nilsson, Ö. and Gustafsson, L.-A. (1978). Projekt Linne rapporterar 80-92. Svensk Bot. Tidskrift, 72: 189-203.
Uhanalaisten eläinten ja kasvien suojelutoimikunta (1986). Uhanalaisten eläinten ja suojelutoimikunnan: III. Hotade växter i Finland. Helsinki. p.114.

Taxonomic note: Syn. = A. gramineum ssp. wahlenbergii Holmberg.

## 24 *Caldesia parnassifolia* (L.) Parl.

IUCN Category

Europe: VULNERABLE
World: ?

**ANGIOSPERMAE (Flowering Plants)**

**ALISMATACEAE**
**(Water Plantain family)**

---

SUMMARY: *C. parnassifolia* is an aquatic species growing at the edge of ponds and wet ditches and produces floating and aerial heart-shaped leaves with small 3-petalled white or pink flowers. Seed is set only in exceptionally warm summers; reproduction is mostly vegetative by turions, submerged structures which develop into new plants. *C. parnassifolia* grows in six Member States: Austria, north-central France, FRG, Hungary, central Italy and Switzerland. It also extends into the USSR as far as north-east Ukraine and Lithuania. The species has declined due to eutrophication of its aquatic habitat and the clearance of ditch banks. In France, *C. parnassifolia* is now only known from the central plains, having already become Extinct in the provinces of Alsace and Dauphiné, the départments of Isère and also possibly Ain. In the FRG, only one site is known in Bavaria.

THREATS: Pollution; eutrophication; clearing of ditch banks.

ACTION PROPOSED:

1. Protect all remaining sites from habitat damage and destruction, particularly pollution;
2. Propagate cultivated material and store stored for future re-introduction work, as appropriate.

SELECTED REFERENCES:

Aymonin, G.G. (1988). *Connaitre les Plantes Protegees. Regions Ouest-nord-est*. Neuchatel, Switzerland, Delachaux and Niestle, p.17.
Cook, C.D.K. Pers. Comm. 5/1990.
Grey-Wilson, C. and Mathew, B. (1981). *Bulbs. The Bulbous Plants of Europe and their Allies*. Collins, London. p. 28, pl. 2.
Haeupler, H. and Schonfelder, P. (1988). *Atlas der Farn und Blutenpflanzen der Bundesrepublik Deutschland*. p.533.
Lesouef, J.Y. Pers. Comm. 5/1990.
Marciau, R. (1989). *Les Plantes Rares et Menacees en Region Rhone Alpes*. Museum Hist. Nat. Grenoble.
Secretariat de la Faune et de la Flore (1989). *Inventaires deFaune et de Flore: Atlas Preliminaire des Especes Vegetales Protegees du Dauphine*. Paris. p.43.

## FLOATING WATER-PLANTAIN

25 Luronium natans (L.) Raf.

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering plants) ALISMATACEAE (Water-Plantain family)

---

SUMMARY: Luronium natans is a perennial freshwater aquatic herb with elongated stems, often rooting at the nodes; leaves aerial or submerged. It grows in ponds, lakes, rivers and canals. Floating Water-Plantain is has already become rare or threatened in 7 of the 10 Member States in which grows. It is not threatened in France or the UK but it is known to have been lost from some sites in these countries; its status in Italy is unknown. Equally threatened throughout eastern Europe. Probably the most serious threat to this species is water pollution, although canalisation and riverbank "improvements" have also caused widespread damage. In general, the plant appaears to recolonise well so appropriate could prove very effective in its recovery at many sites where it has been lost of diminished.

Member State distribution: Belgium (R), Denmark (E), France (nt ), FRG (V), Italy (?), Netherlands (R), Norway (E), Spain (V), Sweden (E), UK (nt). Also present in European USSR.

THREATS: Water pollution, including eutrophication and acidification; changes in water level; river straightening; canal restoration; over-grazing and trampling.

ACTION PROPOSED:

1. Support field surveys to census the populations;
2. Protect all sites from water pollution and unnatural changes in water level;
3. Protect key sites from changes in management which could damage the vegetation, e.g. neglect or overgrazing, over-zealous clearing of aquatic vegetation.

SELECTED REFERENCES:

Cook, C.D.K. Pers. Comm. 5/1990.
Hulten, E. and Fries, M. (1986). Atlas of North European Vascular Plants. Pp. 45 and 979.
Ingelog, T. Pers. Comm. 11/1989.
Lojtnant, B. and Worsoe, E. (1977). Forelobig Status over den Danske Flora. Reports from the Botanical Institute Univ. Aarhus, No. 2. p. 136.
Lojtnant, B. (1985). Rodlist over Danmarks Karplanter. Kobenhavn. p. 19.
Morgan, V.M. Pers. Comm. 12/1989.
Nilsson, O. and Gustavsson, L.-A. (1978). Projekt Linne rapporterar 64-79. Svensk Bot. Tidskr., 72: 6-9.

Taxonomic note: Synonyms: Elisma natans (L.) Buchenau and Alisma natans L.

## GIANT SNOWDROP

26 Galanthus elwesii Hook. fil.

IUCN Category

Europe: CANDIDATE
World: CANDIDATE

ANGIOSPERMAE (Flowering Plants) AMARYLLIDACEAE (Daffodil family)

---

SUMMARY: This spring-flowering snowdrop of woods, scrub and rocky meadows, is a short, often tufted plant sometimes reaching 18 cm in height. Present in two Member States (Greece and Turkey), where it is being heavily exploited by the horticultural trade. Also present in Bulgaria, Romania, Yugoslavia and the USSR, where it is coming under similar threat of exploitation. The Giant Snowdrop has attracted much media coverage in recent years due to its mass exploitation from the wild, notably from Turkey. Today, it is one of the most commonly sold species of snowdrop on supermarket shelves and garden centres. Current figures estimate that over 175 million Galanthus bulbs, all wild in origin, have been exported from Turkey over the past 5 years. Not surprisingly, Turkish botanists report that the Giant Snowdrop has dramatically diminished, especially in the Taurus mountain region in southern Anatolia, with remaining populations confined to steep slopes. Threats of collecting and export quotas have only served to increase damage by encouraging early harvesting of immature bulbs (before the leaves have yellowed or the seed set), resulting in decay during storage. As plants become increasingly scarce in the wild, the focus simply moves to other closely related species such as G. gracilis and G. fosteri. The bulbs of Galanthus have recently aroused further conservation interest because of their content of galanthamine, a substance found to be of use in the treatment of poliomyelitis. The genus is currently listed on Appendix II of the Convention on International Trade in Endangered Species (CITES), however, Turkey has yet to become a party to this vital Convention.

THREATS: Largely uncontrolled large-scale and intensive commercial exploitation.

ACTION PROPOSED:

1. Encourage the establishment of nurseries for artificial propagation;
2. Promote the development of local education programmes about plant conservation, focusing upon sustainable harvesting of bulbous species.

SELECTED REFERENCES:

Demiriz, H. and Baytop, T. (1985). The Anatolian Peninsula. In: Gomez-Campo, C. (Ed.) Plant Conservation in the Mediterranean Area. Pp. 113-121.

Ekim, T. et al. (1984). Turkiye'nin Ekonomik Deger Tasiyan Geofitleri Uzerinde Taksonomik Ve Ekolojik Arastirmalar (Taxonomic and Ecological Investigations on the Economic Geophytes of Turkey). Turkiye Bilimsel Ve Teknik Artastirma Kurumu, Ankara (unpublished). 75 pp.

Oldfield, S. (1989). Bulb Propagation and Trade Study (Phase II). World Conservation Monitoring Centre unpublished report prepared for WWF-US. 63 pp.

Oldfield, S. (1990). The International Trade in Bulbs. Traffic Bull., 11(2/3): 34-46.

## ANGEL'S TEARS

31 Narcissus triandrus L.

IUCN Category

Europe: Commercially threatened
World: Commercially threatened

ANGIOSPERMAE (Flowering Plants) AMARYLLIDACEAE (Daffodil family)

---

SUMMARY: Very attractive small bulb, with clustered white or creamy-yellow flowers from northern Portugal, northern Spain and south-west France. It grows between 100-120 m in mountain pastures, hedges, woods and rocky places. N.triandrus is still widespread in the wild but its serious exploitation to meet demand from the international horticultural trade poses a major threat to the plant's long-term survival. This particular species is also representative of many other species in this genus in Portugal, from where the export of about 1 million Narcissus bulbs takes place annually. A complete ban on trade in wild Narcissus species is recommended (Oldfield, in prep.), together with the promotion of a true commercial propagation system to replace the present practice of cultivating wild-transported stocks.

THREATS: Severe over-collecting.

ACTION PROPOSED:

1. Support a complete ban on trade in wild Narcissus species;
2. Support the establishment of a verifiable commercial propagation system to replace the present practice of cultivating wild-transported stocks.

SELECTED REFERENCES:

Grey-Wilson, C. and Mathew, B. (1981). Bulbs. The Bulbous Plants of Europe and their Allies. Collins. p.148.

Oldfield, S. (1990). The International Trade in Bulbs. Traffic Bull. 11(2/3): 34-46.

Taxonomic note: Synonyms in Flora Europaea = N. capax, N. cernuus, N. concolor, N. pallidulus, N. pulchellus, Queltia capax.

# GREEN-FLOWERED NARCISSUS

2 Narcissus viridiflorus Schousboe

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

AMARYLLIDACEAE (Daffodil family)

---

SUMMARY: Green-flowered Narcissus is an Autumn-flowering bulbous plant with narrow bluish leaves to about 30 cm tall and clusters of 2-5 dull green, daffodil-shaped flowers with a slightly unpleasant smell. After flowering, the fruiting head elongates and arches over to plant the seeds in nearby ground. Its habitat is damp, sandy places, and the species is known in North Africa, and in southwest Spain and Gibraltar. In Spain, it is restricted to the southern half of the Province of Cadiz, where it is locally common, but the habitat is threatened by drainage ditches dug by local farmers, plus recently there has been severe and unnecessary over-collecting by research students. The species is an unusual Narcissus, with some horticultural value to enthusiasts, but it is thought to be unobtainable now in the bulb trade.

THREATS: Drainage; digging; collection.

ACTION PROPOSED:

1. All sites should be protected from habitat damage and destruction, including lowering of the water table, and collecting should be strictly controlled;
2. Cultivated material should be increased, and seed stored, to supply any commercial requirements and for reintroduction, if required.

SELECTED REFERENCES:

Akeroyd, J.R. Pers. Comm. 3/1990.
Grey-Wilson, C. and Mathew, B. (1981). Bulbs. The Bulbous Plants of Europe and their Allies. Collins. p.148.
Oldfield, S. (1990). The International Trade in Bulbs. Traffic Bull. 11(2/3):\34-46.
Smythies, W. Pers. Comm. 5/1985.

l. - coming up for Cadiz.

## RHAZIA

34 Rhazya orientalis (Decaisne) A.DC.

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

APOCYNACEAE (Oleander family)

---

SUMMARY: This is a handsome perennial up to 60 cm tall, with numerous oval to lance-shaped leaves, clusters of pale blue flowers up to 1.5 cm across, and fruits 3-8 cm. It is restricted to Greek and Turkish Thrace and a small part of north-western Anatolia. Rhazia is known from one locality in Greece, near Porto Lagos in western Thrace. Three localities were known in Turkey, but it is now probably extinct in European Turkey. The habitat is damp places, especially those flooded during the winter months, in pasture amongst thorny shrubs. The Porto Lagos region is characterised by low plains, lakes, lagoons, reed-beds and other wetland habitat near the coast. It is an important ecosystem for both plants and birds, under threat from industrial development and changes in land use. The Greek plants are apparently somewhat different to those from Turkey. The Oleander family is rich in pharmaceutical chemicals, and Rhazia is an ornamental garden plant. Wild origin material is in cultivation in the Belmonte Arboretum and Botanic Gardens, Wageningen.

THREATS: Industrial development; over-grazing; drainage.

ACTION PROPOSED:

1. Protect the ecosystem from further industrial development and drainage;
2. Reduce grazing levels;
3. Field survey, particularly in Turkey, to identify and assess the remaining populations;
4. Wild origin material should be propagated and increased, as a genetic resource and for restocking the wild populations if necessary. Turkish and Greek stocks should be cultivated in genetic isolation to preserve both races.

SELECTED REFERENCES:

Zahariadi, C. (1974). Quelques taxons rares ou nouvellement découverts de la flore de la Grèce. Ann. Musei Goulandris, 1: 175-176.
Davis, P.H. (Ed.)(1978). Flora of Turkey, 6: 161.

This conservation summary is based on an account by Dr. J.R. Akeroyd, for which WCMC is most grateful.

# CURLED ALKANET

Anchusa crispa Viv.* IUCN Category

Europe: ENDANGERED
World: ENDANGERED

ANGIOSPERMAE (Flowering Plants) BORAGINACEAE (Borage family)

---

SUMMARY: Curled Alkanet is a very rare annual or biennial species which grows to almost 30 cm high and produces small blue flowers. This attractive endemic of Corsica and Sardinia grows in sand dunes near the sea and also occasionally inland up to 700 metres altitude. In Corsica, only 7 populations have been confirmed recently: 5 in the Golfe de Valinco, and another 2 in the south at Favone and Cannella, where both populations have declined due to beach cleaning operations. Populations known from the north of Corsica have not been seen since 1981, where it is thought they are now extinct. In Sardinia, the species has been recorded only along the north and north-west coasts in the vicinity of Golfo Palma and Stagno di Pilo, respectively. The species is protected from collecting under French law.

THREATS: Trampling; beach cleaning; urban development; sand-quarrying; tourism; over-collecting.

ACTION PROPOSED:

1. Establish protected areas where appropriate;
2. Control tourist development to prevent further damage to remaining sites;
3. Ensure that wild origin material is brought into cultivation and increased for future re-stocking, if appropriate.

SELECTED REFERENCES:

Aboucaya, A. Pers. Comm. 5/1990.

Aymonin, G.G. (1977). Etudes sur le regressions d'especes vegetales en France. Rapport No. 3. Liste generale des espece justifiant des mesures de protection. Ministere de la Culture et de l'Environnement. p.7.

Conrad, M. Pers. Comm. 3/1990.

Constandriopulos, J. (1962). Recherches sur la flore endemique de la Corse et sur ses origines. Ann. Fac. Sc. Marseille, 165-166.

Gamisans, J. (1985). Catalogue des plantes vasculaires de la Corse. Edited by the Parc naturel regional, Ajaccio.

Olivier, L. Pers. Comm. 8/1983.

Pedrotti, F. et al. (Eds.) (1971, 1979). Censimento dei Biotopi di Rilevante Interesse Vegetazionale Meritevole di Conservazione in Italia. Camerino. pp.20-16.

Valsecchi, F. (1976). Il genere Anchusa in Sardegna. Webbia, 30(1): 49-52.

Valsecchi, F. (1979). Le Piante Endemiche Della Sardegna: 80-83. Boll. Soc. Sarda Sci. Nat., 19: 328-330.

45 **Myosotis rehsteineri Wartm.***

IUCN Category

Europe: **ENDANGERED**
World: **ENDANGERED**

ANGIOSPERMAE (Flowering Plants) BORAGINACEAE (Borage family)

---

SUMMARY: An aquatic (perennial?), endemic to the Alps, occurring in Italy (around the shores of Lake Constance, near Langenargen, Kressbronn, Constance and Bodman), the Federal Republic of Germany (on the banks of the Rhine down to Basle, and shores of Lake Starnberg), Austria, Liechenstein and Switzerland. Endangered throughout its range.

At Lake Constance, it grows on sand and shingle, and is submerged during summer months. Its population is rapidly declining due to pressure from tourism (especially camping and boating), water pollution and eutrophication. Water pollution is believed to have caused its extinction at Lake Lugano. Despite recent improvements in sewage treatment, eutrophication remains a problem. Further controls are considered necessary.

Fortunately, some of the known localities of the plant occur within protected areas around Lake Constance. Collection and cultivation, followed by re-introduction into Lake Constance, could be undertaken. Re-stocking could be carried out at sites of water abstraction along the lake-side, where areas of natural habitat could most easily be protected against disturbance.

Despite the enactment of national plant protection laws in Austria, Switzerland and F.R.G., the plant receives complete protection only in the canton of Schaffhausen, Switzerland, according to the Federal and Cantonal law of 1974, relating to the protection of wild growing plants. The species does, however, receive official international protection under the Council of Europe's Berne Convention on the Conservation of European Wildlife and Natural Habitats. Enforcement in the field is now awaited especially in Austria where no national protection measures are provided.

The plant is in cultivation in the University Botanic Garden at Cambridge, U.K., at Botanischer Garten und Museum, Berlin-Dahlem, F.R.G., and in two Swiss gardens: the University of Zurich Botanic Garden and the Botanic Garden in St Gallen.

THREATS: Pollution; eutrophication; tourism pressure (especially camping and boating).

ACTION PROPOSED:

1. Protect the habitat from pollution and associated eutrophication, particularly from sewage outfall; as well as tourist disturbances.
2. Propagate the species *ex situ*, and store seed, for possible restocking if appropriate.

SELECTED REFERENCES:

Baltisberger, M. (1981). *Myosotis rehsteineri* Watm. im Ruggeller Riet (FL). *Ber. Geobot. Inst. ETH, Stiftung Rubel*. 48: 161-163.
Bresinsky, A. and Grau, J. (1963). *M. rehsteineri* Wartm. am Starnberger See. *Ber. Bayer. Bot. Ges*., 36: 64.
Dörr, E. (1977). Flora des Allgäus - 11. Teil: Boraginaceae-Solanaceae. *Ber. Bayer. Bot. Ges*., 48: 35.
Ern, H. Pers. Comm. 7/1980.
Peccenini Gardini, S. Pers. Comm. (pre 1982).
Wildenhain, Pers. Comm. 11/1980.

Taxonomic note: Synonym = *M. scorpioides* ssp. *caespititia*.

# SEASIDE OMPHALODES

Omphalodes littoralis Lehm.* | IUCN Category

Europe: ENDANGERED
World: ENDANGERED

ANGIOSPERMAE (Flowering Plants) | BORAGINACEAE (Borage family)

---

SUMMARY: Seaside Omphalodes is a small annual, c.15 cm tall, with spade-shaped leaves and small, white, star-shaped flowers. It grows in coastal sand-dunes in France and Spain, where it has become extremely Endangered in both countries. The FRench populations are confined to the west coast, but have been lost from at least 9 localities, including all those in Landes, and all mainland sites Finistère and Charente Maritime. 20 sites are believed to remain, distributed from Finistère in the north to Ile d'Oléron in the south. The most secure populations are those on the smaller off-shore islands where tourist pressures (particularly trampling) have yet to be felt. The plant's early flowering time may have afforded the species some protection. The largest surviving population in France is on the tiny Ile d'Hoëdic off the coast of Morbihan, where in 1986, the plants were still abundant over several hectares. Very little information is available about the Spanish populations, regarded by some taxonomists as belonging to a separate subspecies.

Wild origin material is in cultivation in two botanic gardens.

THREATS: Tourism (especially trampling); urbanisation; forestry.

## ACTION PROPOSED:

1. Protect all sites from habitat damage and destruction;
2. Establish those sites with the largest populations as protected areas;
3. Propagate cultivated material for re-introduction, if appropriate.

## SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les plantes protegees. Regions ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestlé, Paris, La fédération Française des sociétés de protection de la nature. p. 35.

Dupont, P., Herault, A. and Bouzille, J.B. (1985). Contribution a la connaissance de la flore et de la végétation de l'Ile d'Yeu. Bull. Soc. Bot. du Centre-Ouest nouv. ser. t16: 283-307.

Lahondère, C. (1975). Compte-rendu de l'excursion des 18 et 19 mai 1975 a l'Ile d'Oléron. Bull. Soc. Bot. du Centre-Ouest, 6: 23-29.

Lahondère, C. (1984). Compte-rendu de l'excursion du 8 mai 1983 a l'Ile de Ré. Bull. Soc. Bot. du Centre-Ouest, nouv. ser. t15: 307-312.

Lesouef, J.Y. (1986). Les Plantes Endemiques et subendémiques les plus Menacées de France. (Unpublished report). Pp 96-98.

Taxonomic note: Treated in Med-Checklist as two subsp., O. littoralis subsp. littoralis in France, and O. littoralis subsp. gallaecica Lainz in Spain.

Ga [illegible] V/R but not threatened
(Ja[illegible] [illegible])

52 Solenanthus albanicus (Degen & Bald.) Degen & Bald.* IUCN Category

Europe: VULNERABLE
World: RARE

ANGIOSPERMAE (Flowering Plants) BORAGINACEAE (Borage family)

---

SUMMARY: A biennial herb which grows to about 90 cm tall, with a flower spike of small cylindrical purplish flowers, which grows in dry places on mountain rocks. It is found only in Albania and in N.W. Greece, in the district of Pogoni. It is officially protected by a Greek Presidential Decree, No. 67 of 1980.

THREATS:

ACTION PROPOSED:

1. More field information is needed about this species and the threats to it before action can be planned;
2. Propagate wild collected stocks for the augmentation of the wild populations if necessary.

SELECTED REFERENCES:

## Jasione lusitanica A.DC.

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

CAMPANULACEAE (Harebell family)

---

SUMMARY: This is a perennial herb with upright unbranched stems to about 70 cm tall, bearing small blue flowers and many small leaves with thickened margins. It grows in maritime sands, usually on stabilised dunes, and is endemic to the Iberian peninsula. The majority of the plants are in northwest and central Portugal, from Porto to Caminha, but the species also occurs northwards to La Toja in Galicia, north-west Spain. The plant's sand dune habitat is severely threatened by tourism and the development pressures which go with it, such as urbanisation, road-building, alteration of water-tables, and trampling of fragile vegetation.

THREATS: Tourism; urbanisation; trampling; sand extraction.

ACTION PROPOSED:

1. All sites should be protected from habitat damage and destruction;
2. Propagate wild collected stocks for the augmentation of the wild populations if necessary.

SELECTED REFERENCES:

Escudeiro, A.S.C. Pers. Comm. 5/1990.
Malato-Beliz, J. Pers. Comm. 3/1990.
Parker, P.F. (1981). The endemic plants of metropolitan Portugal, a survey. Bol. Soc. Brot., ser. 2, 53(2): 975.
Pinto da Silva, A.R. (1981). Plantas em perigo: Jasiones. Bol. Comissio Nacional do Ambiente. Ano V(4)-Anexo.

63 Physoplexis comosa (L.) Schur

**IUCN Category**

**Europe: VULNERABLE**
**World: VULNERABLE**

ANGIOSPERMAE (Flowering Plants) CAMPANULACEAE (Harebell family)

---

SUMMARY: A very attractive, small hairless perennial herb, with toothed leaves and wavy stems, about 15 cm tall, producing hemispherical flower heads with 8-20 pale pink and blackish violet flowers. It grows in calcareous rock crevices in the southern Alps, in Austria, Italy and Yugoslavia. In Italy many widely scattered stations are known, in an area recognised as a centre of endemism and plant genetic diversity. The plant has value as an ornamental species and as a result has become Vulnerable in Italy and Rare in Austria.

THREATS: Over-collecting.

ACTION PROPOSED:

1. Protect all sites from habitat damage and destruction, enforcing strict controls on collecting;
2. Propagate wild origin material and make available for collectors so as to remove pressures on the wild populations.

SELECTED REFERENCES:

Niklfeld, H. (Ed.) (1986). Rote Listen Gefahrdeten Pflanzen Osterreichs.
Seybold, S. Pers. Comm. 8/1977.
Tornadore. Pers. Comm. 10/1989

Taxonomic note: Synonym = Phyteuma comosum L.

Dianthus rupicola Biv. IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants) CARYOPHYLLACEAE (Pink family)

---

SUMMARY: Dianthus rupicola is a small shrub 60 cm tall, with narrow leaves and heads of attractive pink flowers. It has horticultural value and is found in Majorca, Spain, southern Italy and Sicily. In Italy it has been recorded from scattered localities from the provinces of Camparia, Basilicata, Puglia, Calabria, at altitudes from 0 to 800 m. In Sicily it is known on the mainland and islands, as far south as the Island of Lampedusa, at altitudes from 0 to 800 m. In Italy, this Dianthus has been recognised since 1959 as a 'Vulnerable' species, probably due to the pressures of collecting.

THREATS: Probably collecting.

ACTION PROPOSED:

1. More field information is required about this plant and the threats to it before conservation action can be planned;
2. Material should be brought into cultivation for reintroduction if required.

SELECTED REFERENCES:

Barreno, E. (Ed.). (1984). Listado de Plantas Endemicas, Raras o Amenazadas de Espana. Informacion Ambiental. No.3.
Bernal, M., Lainz, M. and Munoz Garmendia, F. (1990). In: Castroviejo et al. Flora Iberica, II: 460-461.
Corti, R. (1959). Specie rare o minacciate della flora Meditetrranea in Italia. In IUCN Animaux et vegetaux rares de la region Mediterraneenne. Proc. IUCN 7th Tech.. Meeting, 11-19 September, Athens..
Ferguson, K. Pers. Comm. 8/1975.
Filipello, S. Pers. Comm. 5/1978.
Jalas, J. and Suominen, J. (Eds) (1972-). Atlas Florae Europaeae: Distribution of Vascular Plants in Europe. The committee for mapping the Flora of Europe and Societas Biologica Fennica Vanamo, Helsinki.
Pignatti, S. et al. (1980). Flora d'Italia,: 266.

73 Moehringia tommasinii Marches. IUCN Category

Europe: ENDANGERED/VULNERABLE
World: ENDANGERED/VULNERABLE

ANGIOSPERMAE (Flowering Plants) CARYOPHYLLACEAE (Pink family)

---

SUMMARY: This is blue-green hairless perennial, with sprawling stems to 20 cm long and rather inconspicuous flowers, which grows at altitudes of 300-500 m on calcareous rocks, often on walls in cave entrances. It is known from the Istra peninsula to the north of the Adriatic Sea, where most of its populations are in northwest Yugoslavia (where the plant is Rare), but a very few are found near Trieste in Italy, where the populations are thought to be stable. There are also old records from near Bolzano in north Italy, and the Tirol in Austria.

THREATS:

ACTION PROPOSED:

1. More field information is needed about this species and the threats to it before action can be planned;
2. Propagate wild collected stocks for the augmentation of the wild populations if necessary.

SELECTED REFERENCES:

Mayer and Walters, S.M. Pers. Comm. 2/1976.

Silene furcata Raf. subsp. angustiflora (Rupr.) Walters | IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants) CARYOPHYLLACEAE (Pink family)

---

SUMMARY: Endemic to northern Europe, including Norway, Finland and Sweden, Silene furcata subsp. angustiflora is a small perennial, with sticky-hairy stems, 2 to 3 pairs of narrow leaves, and small, solitary white flowers. It grows on shady, calcareous rocks along rivers, ravines and gorges, on gravelly exposed slopes and, in Sweden, in man-made habitats such as roadsides, railway embankments and snowsheds. Once common in Finland at the turn of the century, the species has since suffered a serious decline there due to over-collecting. Today, only one Finnish site remains, consisting of a tiny population which is estimated could fit onto just 2 herbarium sheets; it is still vulnerable to collecting and changes in microclimate caused by the logging of nearby forests. In Sweden, the species is Rare and its populations seem to be stable. In Norway the habitat of the species is under threat.

THREATS: Collecting; logging.

ACTION PROPOSED:

1. Protect all sites from habitat damage and destruction;
2. Prohibit collecting in Finland and Norway;
3. Ensure that cultivated stocks are maintained and multiplied to supply material for re-introduction, if appropriate.

SELECTED REFERENCES:

Alanen, A., Pers. Comm. 1/1990
Hoiland, K., Pers. Comm. 1/1990
Hultén, E. and Fries, M. (1986). Atlas of North European Vascular Plants. Koeltz Scientific Books. Pp. 393 and 1045.
Ingelög, T., Pers. Comm. 2/1990
Uhanalaisten eläinten ja kasvien suojelutoimikunta (1986). Uhanalaisten Eläinten ja Suojelutoimikunnan: III. Hotade Växter i Finland. Helsinki. p. 54.

Taxonomic note: Synonyms = Wahlbergella angustiflora Rupr. (Flora Europaea)

## CORSICAN CAMPION

98 *Silene velutina* Pourret ex Loisel.*

IUCN Category

Europe: **ENDANGERED**
World: **ENDANGERED**

ANGIOSPERMAE (Flowering Plants) CAROPHYLLACEAE (Pink family)

---

SUMMARY: The Corsican Campion is a robust, hairy perennial growing to 60 cm and producing heads of white or red flowers. This plant is endemic to a small area of the Mediterranean and has been found in the past in Corsica and adjacent islets, Spain (including the Balearics), Sardinia and Algeria. However it is now known only from two islets, l'ile du Toro and l'ile de Piana, off the south-east coast of Corsica, where two small populations are thought to survive. One of these localities, on l'ile du Toro, has been suggested as a potential military target for the French navy but this has been prevented in order to protect fishing interests in the area. Firing would undoubtedly be a severe threat to the survival of the Corsican Campion.

THREATS: Tourism.

ACTION PROPOSED:

1. Undertake field survey to investigate the occurrence of the *S.\velutina* in any of its former localities;
2. Establish protected areas along those stretches of coastline where the species is still extant in order to prevent damage or destruction to the habitat;
3. Ensure that cultivated stocks are maintained and multiplied to supply material for re-introduction, if appropriate.

SELECTED REFERENCES:

Benedetto Lanze (1983). *Plusieurs Ouvrages sur les Végétaux Rares des Iles Cerbicale*, Natura, Milano.
Conrad, M., Pers. Comm. 1/1982.
Gamisans, J. (1985). *Catalogue des Plantes Vasculaires de la Corse*. Edited by the Parc naturel regional, Ajaccio.
Olivier, L., Pers. Comm. 8/1983.
Pignatti, S. (1982). *Flora d'Italia*. p. 248.

## STALKED SEA-PURSLANE

Halimione pedunculata (L.) Aellen

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

CHENOPODIACEAE (Goosefoot family)

---

SUMMARY: This is an erect annual to 50 cm tall (although normally much lower), with silvery-mealy leaves, tiny greenish flowers and stalked fruits. It grows in salt marshes and other saline places such as dune slacks and brackish grassland, and its natural distribution is from north and northwest Europe to the USSR, including Belgium, Denmark, France, FRG, Netherlands, Sweden and UK. In the western parts of its range, it has seriously declined: in Belgium only one site persists, at Zwin; in France it is now restricted to the estuaries of Picardie and the bay of Mont St Michel; it was thought to be extinct in UK, but in 1987 a new population of more than 1,700 plants was discovered. In Sweden the species is not rare, but it has declined and is feared likely to become rare. The species is absolutely dependent on the conservation of the salt-marsh habitat, including its protection from pollution (?), and it may also become extinct at a site following severe spring drought. In UK, material has been experimentally introduced to a new site near to the existing one, but the outcome is not yet known.

THREATS: Land reclamation; pollution; spring drought.

ACTION PROPOSED:

1. In Sweden, key sites should be protected from habitat damage and disturbance. Elsewhere, all sites should be protected.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les Plantes Protegees. Regions ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p. 39.
Ingelög, T. Pers. Comm. 1/1990.
Lavalrée, A. (1981). Plantes Sauvages Protegees en Belgique. Jardin Botanique Nationale de Belgique, Meise. p. 22.
Leach, S.J. (1988). Rediscovery of Halimione pedunculata (L.) Aellen in Britain. Watsonia: 170-171.
Leach, S.J. Pers. Comm. 3/1990.
Perring, F.H. and Farrell, L. (1983). British Red Data Books: 1. Vascular plants, 2nd ed. RSNC. p. 16.
Weeda, E.J. and Westra, R., C. and T. (1985). Nederlandse Oecologische Flora, Wilde Planten en hun Relaties: 1. Pp 167-168.
Weeda, E. J. Pers. Comm. 5/1990.
Westhoff, V. (1989). Gorteria,: 15.

Taxonomic note: Synonyms = Atriplex pedunculata L., Obione pedunculata (L.) Moq.

100 Helianthemum caput-felis Boiss. IUCN Category

Europe: **VULNERABLE**
World: ?

ANGIOSPERMAE (Flowering Plants) CISTACEAE (Rock-Rose family)

---

SUMMARY: H. caput-felis is a compact dwarf shrub, 30 cm tall, with many narrow, hairy leaves and attractive yellow flowers. The unopened flower buds are densely hairy, resembling a cat's head; hence the plant's Latin name. The plants grow on limestone cliffs and other dry places in mainland Spain, the Balearic Is., Sardinia and North Africa. Because of tourist developments on mainland Spain, the species has declined to just 3 sites along coastal cliffs from Alicante to Torrevieja; previous populations in Javea have disappeared completely. On the Balearic Islands, the species is considered Rare, Only one site exists along the west-central coast of Sardinia on the peninsula Capo Mannu, where it grows in association with many other salt-tolerant plants, which together constitute a very intertesting local flora. This peninsula is coming under increasing pressure from various developments, including agricultural expansion, and the entire area deserves protection as a nature reserve.

THREATS: Tourist development.

ACTION PROPOSED:

1. All remaining sites should be protected from habitat damage and destruction; establish the Capo Mannu peninsula as a protected area;
2. This species should be propagated ex situ, and seed stored, for possible re-introduction into the natural habitat, if appropriate.

SELECTED REFERENCES:

Barreno, E. (Ed.) (1984). Listado de Plantas Raras, Endemicas y Amenazadas en Espana. Informacion Ambiental, No. 3.
Delfino, C. (Ed.)(1988). Biotopi dei Sardegna. Societa botanica Italiana. Pp 131, 134.
Gardner, S. Pers. Comm. 1982.

## Artemisia laciniata Willd.

IUCN Category:

Europe: ENDANGERED
World: ?

ANGIOSPERMAE (Flowering Plants) COMPOSITAE (Daisy family)

---

SUMMARY: This is a spreading perennial herb, with divided leaves and nodding heads of papery flowers. It grows in temperate Asia, the Soviet Union, and as far west as Austria (where it is endangered) and G.D.R. (extinct). Records for Czechoslovakia are now thought to have been mistaken. The plants grow in damp meadows and pastures, and thrive best where grazing animals maintain a low sward with some exposed soil. This habitat is fragile and entirely dependent on the maintainance of traditional agriculture, and on high water levels in and around the sites. In Austria only two populations survive, one of which is very small, and another is known to have been lost from a nature reserve, probably as a result of drainage of adjacent farmland.

A. laciniata is a member of a group of related species which are of great scientific interest both for their genetic composition and their biochemistry. It has proved very easy to keep in cultivation, and sets good numbers of fertile seeds.

THREATS: Drainage. Undergrazing. Modern agriculture.

ACTION PROPOSED:

1. More field research is needed in order to identify the precise ecological requirements of this species;
2. The remaining sites should be managed to maintain the optimum conditions for the health of the populations;
3. Cultivated material should be carefully maintained, and seed stored, for future reintroductions, if required.

SELECTED REFERENCES:

Greger, H. (1982). New chemical markers within Artemisia (Compositae-Anthemideae). In Margaris et al. (Eds) Aromatic Plants and Applied Aspects. Martinus Nijhoff, The Hague.
Szabo, G, Greger, H and Hofer, O (1985). Coumarine-hemiterpene ethers from Artemisia species. Phytochemistry 24: 537-541.

This conservation summary is based on an account prepared by Mag. Dr Gerhard Karrer, for which WCMC is extremely grateful.

111 Artemisia pancicii (Janka) Ronninger

IUCN Category:
Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

COMPOSITAE

---

SUMMARY: A. pancicii is a spreading perennial herb, wich silkyhairy, divided leaves and nodding heads of papery flowers. It is only known from few localities with small populations from Austria, Czechoslovakia and Yugoslavia. In Austria there are only five populations in the federal-states Lower-Austria and Burgenland.

THREATS: Building activity (some of the populations are in the surroundings of Vienna), afforestation with Robinia pseudacacia.

ACTION PROPOSED: Protect sites from habitat damage.

SELECTED REFERENCES:

NIKLFELD, H. et al. (1986): Rote Listen gefährdeter Pflanzen Österreichs. - Grüne Reihe des Bundesministeriums für Gesundheit und Umweltschutz 5: 207 pp.
NIKLFELD, H. (1990/10): Pers. Comm.

# PYRENEAN ASTER

Aster pyrenaeus Desf. ex DC.* IUCN Category

Europe: **ENDANGERED**
World: **ENDANGERED**

ANGIOSPERMAE (Flowering Plants) COMPOSITAE (Daisy family)

---

SUMMARY: A stout perennial which grows to about 90 cm tall, with toothed leaves and bluish-lilac flowers, this beautiful alpine plant is known from a few scattered localities in the French Pyrenees. In addition, a few plants were found at a locality in the Picos de Europa (northern Spain) in 1984. It grows in moist turf along stream banks in mountainous areas. Aster pyrenaeus has become extinct at many sites over the past 100 years, probably as a result of collecting, and is thought to be declining in all remaining localities. Wild origin material is in cultivation in the following French gardens: Conservatoire Botanique de Brest; Conservatoire Botanique de Porquerolles; Jardin Botanique de Nancy. Re-introduction experiments have been attempted without success.

THREATS: Collecting (in the past).

ACTION PROPOSED:

1. Survey existing populations to assess threats and identify priority sites for conservation;
2. Protect priority sites from habitat degredation;
3. Ensure that wild origin material is increased in cultivation for future re-stocking if appropriate.

SELECTED REFERENCES:

Aymonin, G.G. (1977). Etudes sur le regressions d'especes vegetales en France. Rapport No. 3. Liste generale des espece justifiant des mesures de protection. Ministere de la Qualite de la Vie. 13.

Aymonin, G.G. (1988). Connaitre les Plantes Protegees. Regions Pyrenées Aquitaine. Neuchatel, Switzerland, Delachaux and Niestlé, Paris, La fédération Française des sociétés de protection de la nature. p.15.

Lesouef, J.Y. (1986). Les Plantes Endemiques et subendémiques les plus Menacées de France. (unpublished report). Pp. 76-78.

Montserrat Marti J.M. (1984). Areas et limites de distribucion de algunas plantas pirenaicas. Coll. Bot., 15: 311-341.

Olivier, L. (1984). La reintroduction de plantes indigenes disparues ou menacees de disparition en region mediterraneenne un des Vecteurs de la strategie conservatoire. C.R. Soc. Biogeogr., 60(1): 51-66.

115 Carduus myriacanthus Salzm. ex DC. IUCN Category

Europe: ENDANGERED
World: ?

ANGIOSPERMAE (Flowering Plants) COMPOSITAE (Daisy family)

---

SUMMARY: This is an annual, c.30 cm tall, with spiny-hairy, winged stems, narrow spiny leaves and heads of tiny papery flowers. It grows in grassland over maritime sands in south-west Spain, near Cadiz. Only 2-3 localities for the species are known in Spain between Cadiz and Algeciras, where tourist developments have become a threat to the plant's survival. Only one other record exists for the plant in Spain in Almeria province, but this thought to be erroneous. C. myriacanthus also occurs in north Africa, but no information on its status there is available.

THREATS: Tourism.

ACTION PROPOSED:

1. Establish protected areas for the species to prevent further encroachment of tourist developments.
2. Propagate cultivated matetrial and store seed for future re-introduction, if appropriate.

SELECTED REFERENCES:

Valdés, B., Talavera, S. and Fernandez-Galiano, E. (Eds) (1987). Flora Vascular de Andalucia Occidental 3. Ketres, Barcelona. p. 132.

Taxonomic note: Synonym = C. baeticus Boiss. & Reuter.

Jurinea cyanoides (L.) Reichenb.

IUCN Category

Europe: **ENDANGERED**
World: NOT **THREATENED**

ANGIOSPERMAE (Flowering Plants)

COMPOSITAE (Daisy family)

---

SUMMARY: This is a perennial plant, c.60 cm tall, producing one to several rounded heads of small pink or purplish flowers. Present in one Member State, the Federal Republic of Germany, where it has become Endangered; information about the cuase of its decline not available. Recorded from Bavaria, between Karlsruhe and Wiesbaden, vgere it grows on dry, usually sandy ground.
Also Endagered in neighbouring Czechoslovakia and present in the European USSR.
THREATS: No information.

ACTION PROPOSED:

1. More field information is required about this plant and the threats to it before conservation action can be planned;
2. Wild origin cultivated material should be increased, and seeds stored, for re-introduction, if appropriate.

SELECTED REFERENCES:

Blab, J. et al. (1984). Rote Liste der Gafahrdeten Tiere und Pflanzen in der Bundesrepublik Deutschland.
Haeupler, H. and Schönfelder, P. (1988). Atlas der Farn und Blütenpflanzen der Bundesrepublik Deutschland. Stuttgart. p. 533.

Taxonomic note: The German and Czech plants are considered, by Flora Europaea, as subspecifically distinct from the USSR plants.

## SIBERIAN LIGULARIA

149 Ligularia sibirica (L.) Cass. IUCN Category

Europe: **ENDANGERED**
World: ?

ANGIOSPERMAE (Flowering Plants) COMPOSITAE (Daisy family)

---

SUMMARY: Siberian Ligularia is a tall, erect perennial, bearing loose heads of large yellow daisy-shaped flowers. It has been recorded from 3 Member States, Austria, France and Hungary, where it is Extinct in the latter and Endangered in both Austria and France. The plant is also declining fast throughout the remainder of of its east European range. Threatened throughout its range by the destruction of its fragile habitat by drainage operations, resulting in the loss of damp meadows, peaty marshes and ponds. In France, most populations are located in the Massif Central, with a few occurring in the eastern Pyrenees and the Côte-d'Or; other scattered populations still survive in the départements of Cantal and Aveyron, but many populations have disappeared completely in recent years. In Austria, the plant is confined to a few localities in the region of Niederösterreich and Vienna.

THREATS: Drainage.

ACTION PROPOSED:

1. All sites should be protected from habitat damage and destruction, particularly changes in the water-table;
2. Cultivated material should be propagated and seed stored for re-ntroduction if appropriate.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les Plantes Protégées. Régions ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestlé, Paris, La fédération Française des sociétés de protection de la nature. p. 37.
Lesouef, J.Y. Pers. Comm. 5/1990.
Niklfeld, H. (1986). Rote Listen Gefährdeter Pflanzen Österreichs. Bundesministeriums für Gesundheit und Umweltschutz. p.73.
Sapaly (1982). Atlas Flore Cantal.

# SARDINIAN CABBAGE

Brassica insularis Moris

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

CRUCIFERAE (Cabbage family)

---

SUMMARY: This is a rather shrubby plant, with lobed basal leaves and stems 30-80 cm tall, fragrant white or pale yellow flowers, and slender seed-pods up to 8 cm long. Brassica insularis is found at scattered localities in Sardinia and Corsica and on the small island of Pantellaria off Sicily. It also occurs in Tunisia and Algeria, although Europe is its main centre of distribution. In Corsica two new localities have recently been found, between the Col Saint Antoine and Silroniccio, and at Cap Corse. The Corsican sites appear to be under the greatest threat, particularly by road-widening activities, barrage developments at Sampolo and by the encroachment of surrounding maquis vegetation. A wild relative and possible ancestor of our domestic cabbages (including also broccoli, kale, kohl-rabi and cauliflower) the Sardinian Cabbage may have genes of use for plant breeding, such as those for longevity and resistance to disease.

THREATS: Building development; road-widening; barrage construction; over-collecting; swamping by maquis vegetation.

ACTION PROPOSED:

1. Survey the remaining populations to identify key sites;
2. Introduce appropriate development controls and keep in check encroaching vegetation;
3. Wild origin material should be grown and seeds stored as a matter of urgency, in order to re-stock the wild populations if appropriate and to safeguard the genetic resource.

SELECTED REFERENCES:

Aboucaya, A. Pers. Comm. 5/1990.
Conrad, M. (1986). Notes et contributions a la flore de Corse I. Candollea, 41: 29-30.
Conrad, M. Pers. Comm. 3/1990.
Delfino, C. (Ed.)(1988). Biotopi dei Sardegna. Societa botanica Italiana. Pp. 16, 35, 46, 50-52, 190.
Deschatres R. (1987). Notes et contributions a la flore de Corse II. Candollea, 42: 54.
Gamisans, J. (1985). Catalogue des plantes vasculaires de la Corse. Edited by the Parc naturel regional, Ajaccio.
Pedrotti, F. et al. (Eds.) (1971). Censimento dei Biotopi di Rilevante Interesse Vegetazionale Meritevole di Conservazione in Italia. Camerino. Pp. 20-37, 20-54.

This conservation summary is based on an account provided by Dr J.R. Akeroyd, for which WCMC is most grateful.

195 Sisymbrium supinum L.

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

CRUCIFERAE (Cabbage family)

---

SUMMARY: S. supinum is a small annual herb, with a trailing habit, divided leaves and small white flowers. Its European distribution is quite wide but somewhat disjunct. The species probably originated in the Baltic Islands, where it is still common on Oland, although rare on Gotland. It is dispersed by means of wind, water and the feet of migrating birds. Its natural habitat is seasonally wet gravel and shingle along rivers and besides pools, where it grows as a member of the pioneer vegetation which colonises such places. Such an unstable, agriculturally unproductive habitat is threatened throughout Europe by hydrological engineering works such as artificial embankment and conversion to agricultural land through drainage. The species is now Extinct in Belgium, Luxembourg and the Netherlands, Endangered in France and Switzerland and Vulnerable in Spain. In some of these countries it has retreated to man-made sites such as fields, roadsides, railway embankments and quarries.

THREATS: Embankment of waterways; drainage; under-grazing (Gotland).

ACTION PROPOSED:

1. In Sweden, key sites should be protected from habitat damage, such as under-grazing and fertiliser application and from habitat destruction. Elsewhere, all remaining sites need protection;
2. Store wild origin seed in a seed bank, for selected re-introduction, if appropriate.

SELECTED REFERENCES:

Delvosalle, L., Demaret, F., Lambinon, J. and Lawalrée, A. (1969). Plantes Rares, Disparues ou Menacées de Disparition en Belgique: L'appauvrissement de la Flore Indigène. Ministère de l'Agriculture, Service des Réserves Naturelles Domaniales et de la Conservation de la Nature, No. 4. p. 41, photo 3.

Hultén, E. and Friess, M. (1986). Atlas of North European Vascular Plants. Koeltz Scientific Books.

Ingelög, T., Pers. Comm. 2/1990.

Lawalrée, A. (1969). A propos de Sisymbrium supinum L. (Cruciferae): les oiseaux ont-ils introduit des plantes de Fennoscandie en Europe médiane et méridionale et inversement? Bull. Jard. Bot. Nat. Belgique, 39(1): 1-16.

Lesouef, J.Y. (1986). Les Plantes Endemiques et Subendémiques les plus Menacées de France. (Unpublished report). p. 187.

Weeda, E.J. (1980). Sisymbrium supinum L. In: Mennema, J., Quené-Boterenbrood, A.J. and Plate, C.L. (Eds)(1985). Atlas van de Nederlandse Flora, 1: 188.

## *Eleocharis carniolica* Koch

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) CYPERACEAE (Sedge family)

---

SUMMARY: *E. carniolica* is a member of the Sedge family where it is regarded as a vulnerable plant in 3 of the 4 Member States in which it grows: Austria, Hungary and Italy, while in Turkey, it may also be on the decline, according to the Turkish Red Data Book. The Italian populations have declined due to land reclamation for rice-growing, especially at Baraggia di Rovasenda near Vercelli. The species is a tufted perennial, producing papery brown flowers in small heads on slender stems, 30 cm tall. It grows on riverbanks and in seasonally flooded, grassy places. It has also been recorded from the Ukraine and Afghanistan but where its conservation status is not known.

THREATS: Water pollution; land reclamation; industrial and urban expansion.

ACTION PROPOSED:

1. Remaining sites should be protected from water pollution and all other forms of habitat damage;
2. Propagate wild collected stocks for the augmentation of the wild populations if necessary.

SELECTED REFERENCES:

Caniglia, G. (1981). Il bosco di Carpenedi (Venezia). *Lavori Soc. Ven. Sci. Nat.*, 6(2): 159-161.
Caniglia, G. Pers. Comm. 5/1982.
Ekim, T. *et al*. (1989). *List of Rare, Threatened and Endemic Plants in Turkey*. Turkish Association for the Conservation of Nature and Natural Resources (Serie No. 18). Ankara. p.178.
Niklfeld, H. (1986). *Rote Listen Gefahrdeter Pflanzen Ostereichs*. Bundesministeriums fur Gesundheit und Umweltschutz. p.59.
Peyronel, P. Pers. Comm. 1982.
Pignatti, S. *et al*. (1980). *Flora d'Italia*,: 685.

N.B Possibly Extinct in Turkey due to urbanisation
(Ekim et al. pers. comm 26/6/90)

## ALDROVANDA

200 *Aldrovanda vesiculosa* L. **IUCN Category**

Europe: **VULNERABLE**
World: **NOT THREATENED**

ANGIOSPERMAE (Flowering plants) DROSERACEAE (Sundew family)

---

SUMMARY: Botanists have been fascinated by this rare carnivorous plant even before it was described by Linnaeus in the eighteenth century. The species is a fragile submerged aquatic, bearing whorls of modified leaves which trap small animals. It grows in still, shallow and fairly nutrient-rich water, and prefers hot summers (20 to 30°C). The plant over-winters in the form of detached apical buds which lie dormant in the substrate. Throughout its European range it spreads vegetatively. *Aldrovanda* is now believed Extinct in all Member States with the exception of Hungary, where it is Vulnerable. In France, the species was never common and has not been seen since 1969; Italy had numerous widely dispersed populations, but now has none. It is also extinct in Austria and FRG. Some populations still persist in Switzerland although the species is not considered native there. *Aldrovanda* grows in association with other rare species, including the distinctive and highly threatened fern *Salvinia natans*.

THREATS: 3 main threats: 1) Water pollution due to camping, motor-boats, tourism, afforestation, agriculture, industrialisation and urbanisation. 2) Drainage. 3) Natural succession of lakes to peat bogs.

ACTION PROPOSED:

1. The remaining sites should be strictly protected from all forms of pollution and environmental damage, and measures taken to improve water quality.
2. Investigate the potential for re-introducing plants to former localities and undertake follow-up conservation measures such as habitat restoration as appropriate.
3. Cultivated material should be propagated for possible re-introduction if appropriate.

SELECTED REFERENCES:

Aymonin, G.G. (1988). *Connaître les plantes protégées. Région méditerranéenne*. Neuchatel, Switzerland, Delachaux and Niestlé, Paris, La fédération Française des sociétés de protection de la nature. p. 40.

Berta, J. (1961). Beitrag zur Okologie und Vegetation von *Aldrovanda vesiculosa* L. *Biologia (Bratislava)* 16: 561-573.

Cook, C.D.K. Pers. Comm. 5/1990.

Pedrotti, F. *et al*. (Eds.) (1971). *Censimento dei Biotopi di Rilevante Interesse Vegetazionale Meritevole di Conservazione in Italia*. Camerino. Section 9-37.

Walters, S.M. (1979). Conservation of the European flora: *Aldrovanda vesiculosa* L., a documented case-history of a threatened species. In Hedberg I.(Ed.), *Systematic Botany, Plant Utilization and Biosphere Conservation I.* 76-82.

Gentiana ligustica R.de Vilm. & Chopinet

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

GENTIANACEAE (Gentian family)

---

SUMMARY: This small, but highly attractive, Gentian can be identified by its large, dark blue, solitary bell-shaped flowers, characterised by the presence of green spots in the throat of each flower. A plant of the Maritime Alps and central Apennine mountains of Italy and France, where it can be found growing on calcareous substrates, in alpine meadows.

THREATS: Over-collecting.

ACTION PROPOSED:

1. More field information is required about this plant and the threats to it before conservation action can be planned;
2. Cultivated material should be propagated, and seed stored, for reintroduction if required.

SELECTED REFERENCES:

Gardini Peccenini, S. et al. Pers. Comm. 10/1989.

## EARLY GENTIAN

21. *Gentianella anglica* (Pugsley) E. F. Warbury

IUCN Category

Europe: VULNERABLE
World: -

ANGIOSPERMAE (Flowering Plants)

GENTIANECEAE (Gentian family)

---

SUMMARY: Early Gentian is a British endemic. It has 2 subspecies: *anglica* and *cornubiensis*. It is a small biennial, between 4 and 20 cms tall, with dull purple flowers and linear-lanceolate stem leaves. Subspecies *anglica* grows on chalk grassland in southern England; subspecies *cornubiensis* is confined to the coastal cliffs of north and west Cornwall, and has never been widespread. Subspecies *anglica* has declined rapidly since 1930 owing to the loss of habitat through conversion to arable and building land. The total decline for the species has been from 66 10km squares to abut 36 10km squares.

THREATS: Both subspecies are threatened: subspecies *cornubiensis* by coastal development and increased visitor pressure; *anglica* by continued ploughing up of chalk grassland, and increased visitor pressure on the remaining areas.

ACTION PROPOSED:

1. Collect seed and grow on in cultivation.
2. Protect remaining areas of chalk grassland and coastal cliffs by site designation
3. Control visitor pressure by redirecting main pathways.

SELECTED REFERENCES:

Clapham, A. R., Tutin, T. G., and Moore, D. M. (1987). Flora of the British Isles., 3rd edition. Cambridge University Press.
Perring, F. H., and Walters, S. M. (1982). Atlas of the British flora 3rd edition. EP Publishing Ltd.

# DUNE GENTIAN

Gentianella uliginosa (Willd.) Borner

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

GENTIANACEAE (Gentian family)

---

SUMMARY: Dune Gentian is a very small annual or biennial plant of damp sand-dunes and sea-shore meadows, which produces purple flowers during August-November. Its distribution ranges from Wales in the UK, eastwards to the western USSR. Present in 8 Member States: Denmark, Finland, France, FRG, Netherlands, Norway, Sweden and UK, where it is rare or threatenedd in all except Sweden; in the latter the species is considered taxonomically doubtful. The small size and late flowering of the species may have lead to its under-recording, but it is known to have declined throughout its range. Finland probably supports the largest populations, where 50 to 100 sites are known still to exist. Most populations are dependent on the maintainance by grazing of a low, open sward, and do not persist if grazing is stopped, however two ungrazed sites in Wales survive thanks to disturbance of the vegetation by military vehicles and bombardment, while two others rely on recreational disturbances.

THREATS: Under-grazing and over-stabilising of sand-dunes; building; forestry.

ACTION PROPOSED:

1. In Denmark, Finland, Netherlands, Norway and possibly Sweden, key sites should be identified and protected from damage and destruction, including changes to the traditional land-use, and under-grazing;
2. In France, FRG and UK, where the species is under the greatest threat, all sites deserve protection.

SELECTED REFERENCES:

Alanen, A. Pers. Comm. 1/1990.

Aymonin, G.G. (1988). Connaitre les Plantes Protegees. Regions ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p. 35.

Hulten, E. and Fries, M. (1986). Atlas of North European Vascular Plants. p. 753.

Lambinon, J. Pers. Comm. 6/1990.

Perring, F.H. and Farrell, L. (1983). British Red Data Books: 1. Vascular Plants, 2nd ed. RSNC. p. 37.

Rassi, P. et al. (1986). Uhanalaisten eläinten ja kasvien suojelutoimikunnan mitintö: III Uhanalaiset kasvit. Helsinki. p. 126.

Weeda, E.J. Pers. Comm. 5/1990.

Taxonomic note: Synonym = Gentiana uliginosa Willd., G. amarella (L) Börner subsp. uliginosa.

218 Ramonda serbica Pancic

IUCN Category

Europe: RARE
World: RARE

ANGIOSPERMAE (Flowering Plants)

GESNERIACEAE (African Violet family)

---

SUMMARY: This is a showy perennial herb, with hairy leaves and beautiful lilac to violet flowers with orange-yellow centres and dark violet-blue anthers. Its distribution is centred on Macedonia, and it is found in Albania, Yugoslavia and Bulgaria, as well as in N.W. Greece. The habitat is shady crevices in limestone alpine rocks.

THREATS: Over-collecting.

ACTION PROPOSED:

1. Collecting should be controlled, and the use by horticulturalists of nursery/propagated material encouraged.

SELECTED REFERENCES:

# ARDENNES BROME

Bromus bromoideus (Lej.) Crepin IUCN Category

Europe: EXTINCT
World: EXTINCT

ANGIOSPERMAE (Flowering Plants) GRAMINEAE (Grass family)

---

SUMMARY: This annual grass (130 cm tall), has stout stems producing heads of papery, wind-pollinated flowers bearing stiff, rough awns. The Ardennes Brome, now Extinct, was once a weed of arable fields, growing amongst Spelt Wheat (Triticum spelta L.) in south-east Belgium and just extending into France and Luxembourg. It may also have appeared as an alien in the FRG, the Netherlands and UK. Weed and crop had very narrowly matched growth patterns and seed size, which enabled the Brome to fruit and be re-sown with the wheat each year. Spelt Wheat is no longer cultivated commercially, and the species' dependence on an obsolete agricultural system has caused its extinction in the wild, where it was last recorded in 1935. Fortunately, the Bromus group is of interest to geneticists, taxonomists, and archaeologists, who have cultivated the species for research reasons. As a result, Bromus bromoideus and another extinct grass of arable crops, B. interruptus, have been inadvertently conserved, at least ex situ.

## ACTION PROPOSED:

1. Ensure that large samples of seed are securely seed-banked;
2. Encourage the use of the Ardennes Brome, grown from cultivation, in historical reconstructions of farming practices which are known to have been developed in farm museums and visitor centres.

## SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les plantes protegees. Regions ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p. 41.
Cugnac, A. de (1954). Le Brome des Ardennes. L'etonnante carriere d'une espece rare des confins Ardennais. Bull. Soc. Natur. Luxemb., 1953: 38-75.
Delvosalle, L., Demaret, F., Lambinon, J. and Lawalree, A. (1969). Plantes rares, disparues ou menacees de disparition en Belgique: L'appauvrissement de la flore indigene. Ministere de l'Agriculture, Service des reserves naturelles domaniales et de la conservation de la nature, No. 4. p. 84.
Lesouef, J.Y. (1986). Les Plantes Endemiques et subendemiques les plus Menacees de France. (Unpublished report). p. 52.
Tournay, R. (1968). Le Brome des Ardennes Bromus arduennensis et ses proches, B. secalinus et B. grossus. Bul. Jar. Bot. Nat. Belg., 38: 295-380.

Taxonomic note: Synonym = B. arduennensis Dumort.

221 **Bromus grossus Desf. ex DC.** **IUCN Category**

**Europe: ENDANGERED**
**World: ENDANGERED**

**ANGIOSPERMAE (Flowering Plants)** **GRAMINEAE (Grass family)**

---

SUMMARY: An annual grass with stout stems (130 cm tall), producing heads of papery, wind-pollinated flowers bearing stiff, rough awns. Like the closely related B. bromoideus, it is a weed of arable crops, and is associated with Spelt Wheat (Triticum spelta L.), but this association is fortunately less specific, and hence the decline of this Brome is slightly less disastrous. Its native range is considered by Tournay (1968) to cover Belgium, Luxembourg, north-east France, south FRG, Switzerland, northern Italy, western Austria and Czechoslovakia, however Flora Europaea states that it is native only in Belgium. All other records are considered to be casual occurrences. B. grossus is probably extinct now as an arable weed in Belgium; its most recent record dates back to 1978, although a few sites have recently been found where the species grows as a ruderal plant of disturbed ground. Elsewhere, its populations in other countries, although introduced, have also seriously declined.

THREATS: Improved seed-cleaning techniques; herbicides; fertilisers; the use of new varieties of wheat.

ACTION PROPOSED:

1. Ensure that large samples of seed are securely seed-banked;
2. Key sites should be maintained in arable cultivation, but with no herbicides used where the Bromus populations are densest (probably at the field margins), except for the reactive control of serious weeds if and when these become a problem.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les plantes protegees. Regions ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p. 41.
Delvosalle, L., Demaret, F., Lambinon, J. and Lawalree, A. (1969). Plantes Rares, Disparues ou Menacees de Disparition en Belgique: L'appauvrissement de la Flore Indigene. Ministere de l'Agriculture, Service des reserves naturelles domaniales et de la conservation de la nature, No. 4. p. 84.
Fabri, R. (1983). Bromus grossus s.l. et B. secalinus s.l. en Belgique et au Grand-Duchi de Luxembourg. Bull. Soc. R. Bot. Belg., 116(2): 207-223.
Lambinon, J. Pers. Comm. 6/1990.
Lesouef, J.Y. (1986). Les Plantes Endemiques et Subendemiques les plus Menacees de France. (Unpublished report). p. 53.
Smith, P.M. (1973). Observations on some typical Brome grasses. Watsonia, 9: 319-332.
Tournay, R. (1968). Le Brome des Ardennes Bromus arduennensis et ses proches, B. secalinus et B. grossus. Bull. J. Bot. Nat. Belg., 38: 295-380.

## INTERRUPTED BROME

Bromus interruptus (Hackel) Druce

IUCN Category

Europe: **EXTINCT**
World: **EXTINCT**

**ANGIOSPERMAE** (Flowering Plants)

**GRAMINEAE** (Grass family)

---

SUMMARY: Interrupted Brome is an annual or sometimes biennial grass, with softly hairy stems and leaves, and stiff dense panicles, with the inconspicuous flowers clustered together to give the panicles the characteristic interrupted appearance after which the species is named. Endemic to the UK, where it grew in south and eastern England, it has not been found since 1972, although at one time it was known from 65 ten km squares. The species is almost certainly extinct in the wild, and it was thought to have been completely lost, but luckily scientists in Edinburgh kept the species alive in cultivation, and stocks have been distributed to several botanic gardens and seed banks. The grass was an arable weed of Sainfoin and Clover crops, and its extinction was caused by modern agricultural methods, particularly improved seed cleaning techniques.

ACTION PROPOSED: Continue to periodically monitor those areas where the species was last recorded should the plant reappear.

SELECTED REFERENCES:

Lucas, G. and Synge, H. (1978). The IUCN Plant Red Data Book. IUCN. Pp. 223-224.
Perring, F.H. (1962). Bromus interruptus (Hack.) Druce, A Botanical Dodo? Nature in Cambridgeshire, 5: 28-30.
Perring, F.H. and Farrell, L. (1983). British Red Data Books: 1. Vascular Plants, 2nd ed. RSNC. p.77.

224 Coleanthus subtilis (Tratt.) Seidl **IUCN Category**

Europe: **ENDANGERED/VULNERABLE**
World: **INDETERMINATE**

**ANGIOSPERMAE (Flowering Plants)** **GRAMINEAE (Grass family)**

---

SUMMARY: C. subtilis is a small, inconspicuous annual grass with tiny papery flowers, whose habitat is the muddy margins of rivers, reservoirs or ponds. It is a rare grass of wide distribution but very sporadic occurrence appearing in scattered localities in north and central Europe. Also present in parts of Asia and North America. Large numbers of the plant may appear in very dry summers and then disappear again for maybe several years. In spite of the difficulty of assessing the status of such an elusive species, there is widespread agreement that the plant has declined in many western European countries, due to various disturbances to the plant's seasonally inundated sites. Many have become either totally flooded, drained, re-seeded or built over. Already extinct in 3 out of 5 Member States: Austria, Italy and Norway. Only in France and the FRG is the plant still present, where, in the latter, it is believed reduced to a single locality. In France, where it is regarded as Vulnerable, it occurs in the following districts: Ille-et-Vilaine, Maine et Loire, Loire-Atlantique, Côtes du Nord and Morbihan. Within the family of grasses C. subtilis is the only member of the tribe Coleantheae, and thought to be an ancient taxon.

THREATS: Dam building; canalisation and stabilisation of river banks; water pollution; trampling.

ACTION PROPOSED: Sites where the species is known to persist, or where the habitat still appears suitable, should be protected from changes in water level, from pollution and from other environmental degradation.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les plantes protegees. Regions ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestle, Paris.
Blab, J. et al., (1984). Rote Liste de Gefahrdeten Tiere und Pflanzen in der Bundersrepublik Deutschland.
Lesouef, J.Y. (1986). Les Plantes Endemiques et subendemiques les plus Menacees de France. (unpublished report). Pp. 11, 54-57.
Niklfeld, H. (1986). Rote Listen Gefahrdeter Pflanzen OÖstereichs. Bundesministeriums fuür Gesundheit und Umweltschutz. p.54.
Woike, S. (1968). Funde von Scheidenblütgrass (Coleanthus subtilis) in Deutschland. Natur und Museum, 98(1): 9.
Woike, S. (1969). Beitrag zum Vorkommen von Coleanthus subtilis (Tratt.) Seidl

# BAVARIAN FEATHERGRASS

Stipa bavarica Martinovsky & H.Scholz

IUCN Category

Europe: ENDANGERED
World: ENDANGERED

ANGIOSPERMAE (Flowering Plants)

GRAMINEAE (Grass family)

---

SUMMARY: This grass is a tufted perennial with very narrow, folded leaves and a loose spike of small papery flowers, each with a long bent hair or awn. It is endemic to the F.R.G., where a single locality is known at Finkenstein near Neuberg an der Donau in Bavaria. Here a few tufts of Bavarian Feathergrass grow on a rocky platform of Jurassic limestone overlooking the river Danube, amongst steppe-like vegetation. The site is a much-visited beauty-spot with fine views, and trampling by tourists has severely threatened the plants in the past, but they are now thought to adequately protected both by law and in a reserve, and some cultivated material has been introduced. The species is of taxonomic interest for its position in the genus.

THREATS: Trampling; collecting.

ACTION PROPOSED:

1. Continue to monitor the site, and maintain the current protection.

SELECTED REFERENCES:

Haeupler, H. and Schönfelder, P. (1988). Atlas der Farn und Blütenpflanzen der Bundesrepublik Deutschland. Stuttgart. p. 653.
Lucas, G. and Synge, H. (1978). The IUCN Plant Red Data Book. IUCN. p. 231.
Martinovsky, J.O. and Scholz, H. (1968). Stipa bavarica - eine neue Federgrasart, XIII. Beitrag zur Kenntnis der europaischen Federgrassippen. Willdenovia 4(3): 317-324.
Scholz, H., Pers. Comm. 1982.

231 Stipa styriaca Martinovsky

IUCN Category:
Europe: VULNERABLE
World: VULNERABLE

Angiospermae (Flowering Plants) GRAMINEAE (Grass Family)

---

SUMMARY: This small grass has feathery flower heads, an specially adapted fruits with backwards-pointing hairs with drive the "seeds" into the ground. It is endemic to southeast Austria, where only a very few small populations are known, growing in open habitats in a mountainous area.

The species is of considerable scientific interest for its taxonomy, and the genus has some value as ornamental plants and a source of fibres.

THREATS: Modern agriculture, fertilizing, afforestation, invasion by shrubs, building activity

ACTION PROPOSED: Protection of the habitat by extensive agriculture, stopping of building activities

SELECTED REFERENCES:

NIKLFELD, H. (1979): Vegetationsmuster und Arealtypen der montanen Trockenflora in den nordöstlichen Alpen. - Stapfia 4: 230 pp
NIKLFELD, H. et al. (1986): Rote Liste gefährdeter Pflanzen Österreichs. - Grüne Reihe des Bundesministeriums für Gesundheit und Umweltschutz 5: 207 pp
ZIMMERMANN, A. et al. (1989): Atlas gefährdeter Farn- und Blütenpflanzen der Steiermark. - Steiermärkisches Landesmuseum Joanneum Graz
MELZER, H. (1981): Neues zur Flora von Steiermark; XXIII. - Mitt. naturwiss. Ver. Steiermark 111: 115 - 126

Trisetum subalpestre (Hartm.) Neuman

IUCN Category

Europe: ENDANGERED
World: INDETERMINATE

ANGIOSPERMAE (Flowering Plants)

GRAMINEAE (Grass family)

---

SUMMARY: This is a small, inconspicuous tufted perennial grass to 40 cm tall, with brownish heads of tiny, papery flowers. It has a strikingly disjunct distribution, with the main populations in the arctic parts of the Asian U.S.S.R., and outlying populations in Northern Fennoscandia (Norway, Sweden and Finland). It is thought likely that plants from the two areas are taxonomically as well as geographically separate. In Europe, the species is confined to eight watercourses, where the plants grow in sandy, rocky or gravelly riverside meadows and by rapids and streams. Only when in flower can they be distinguished from T. spicatum, and as the number of plants producing flower spikes varies greatly from year-to-year, the decline which has been noticed in recent years may in fact not be very serious. However, the sites and their vegetation are threatened by undergrazing, which leads to the growth of rough vegetation against which this grass cannot compete, by clearing of meadows for agricultural "improvements", and by regulation of watercourses.

THREATS: Regulation of water courses. Under grazing. Agricultural changes. Road building.

ACTION PROPOSED: All sites should be protected from habitat damage and destruction, including interference with water flow in rivers and streams, and changes in agricultural practise.

SELECTED REFERENCES:

Alanen, A. Pers. Comm. 1/1990.
Hoiland, K. (1986). Utsatte planter i Nord-Norge, spesiell del. Okoforsk rapport 1986: 2.
Hultén, E. and Fries, M. (1986). Atlas of North European vascular plants. Koeltz Scientific Books. p.155.
Nilsson, Ö. and Gustafsson, L.-A. (1978). Projekt Linné rapporterar 80-92. Svensk Bot. Tidskr. 72: 189-203.
Uhanalaisten eläinten ja kasvien suojelutoimikunta (1986). Uhanalaisten eläinten ja suojelutoimikunnan: III. Hotade växter i Finland. Helsinki. p.108.

This conservation summary is based on an account by Dr T. Ingelög, for which WCMC is most grateful.

Taxonomic note: Synonym = T. agrostideum (Laest.) Fries

242 Dracocephalum austriacum L.

IUCN Category

Europe: **VULNERABLE**
World: **?**

ANGIOSPERMAE (Flowering Plants)

LABIATAE (Mint family)

---

SUMMARY: This is a perennial herb or small shrub, c. 60 cm tall, with many divided velvety leaves and attractive spikes of blue-violet flowers. It is a widely distributed plant of dry-open habitats, ranging from south-east France to west-central Ukraine; present in 6 Member States: Austria, France, Hungary, Italy, Switzerland and Turkey, where it is rare or threatened in at least 5 of these countries. In French populations in the Pyrenees were thought to represent a separate subspecies, but have all been lost to over-collecting. In the French region of Dauphiné, 8 localities have been reduced to only 3. The only known Spanish site is tiny and also threatened by collecting. D. austriacum is a choice horticultural species, and members of the genus are used for honey and medicinal reasons.

THREATS: Severe over-collecting; habitat destruction.

ACTION PROPOSED:

1. Collecting should be strictly controlled at all sites, and the use by horticulturalists of artificially propagated material encouraged;
2. Key sites should be protected from habitat damage and destruction.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les Plantes Protegees. Region Alpes-massif central. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p.17.
Bou, J. (1979). Dracocephalum austriacum L. als Pirineus Orientals i Thymelaea tinctoria (Pourret) Endl. a la Garrotxa. Butll. Inst. Cat. Hist. Nat., 44 (Sect. Bot., 3): 131-132.
Landolt, E. (1982). Geschutzte Pflanzen in der Schweiz. ed. 3. Schweizerischer Bund fur Naturschutz, Basel. p.193.
Lesouef, J.Y. (1986). Les Plantes Endemiques et Subendemiques les plus Menacees de France. (Unpublished report). Pp. 5, 23, 26, 31, 135-137.
Niklfeld, H. (1986). Rote Listen Gefahrdeter Pflanzen Ostereichs. Bundesministeriums fur Gesundheit und Umweltschutz. p.58.
Secretariat de la Faune et de la Flore (1989). Inventaires de faune et de flore: Atlas preliminaire des especes vegetales protegees du Dauphine. Paris. p.65.
von Arx, B. Pers. Comm. 5/1990.

Astragalus algarbiensis Coss. ex Bunge* IUCN Category

Europe: **ENDANGERED**
World: **ENDANGERED**

ANGIOSPERMAE (Flowering Plants) LEGUMINOSAE (Pea family)

---

SUMMARY: Although already listed on the current Appendix 1 of the Berne Convention and included in the WCMC database as an 'Endangered' species, very little is known about this plant and its conservation requirements. Flora Europaea recognises it to be restricted to southern Spain and southern Portugal and describes it as a yellow-flowered plant similar to A. odoratus. Various IUCN conservation categories have been assigned the species since 1975, through personal communications between botanists and the IUCN/WCMC Threatened Plants Unit. The Spanish populations have been described as follows: 'possibly Extinct' (Smythies, 1975), and '?' (Barreno, 1984). The Portuguese populations: 'Endangered' (Malato-Beliz, 1975), 'not threatened' (Chenery, 1975) and 'Endangered' (Dray, 1985). In 1980, Sainz Ollero and Hernandez-Bermejo describe the status of the plant in the Iberian Peninsula as 'in imminent danger of extinction'.

THREATS: No information.

ACTION PROPOSED: More detailed information about the status of the plant, its population sizes, threats, etc. is needed if the species is to be retained on Appendix 1.

SELECTED REFERENCES:

Barreno, E. (Ed.) (1984). Listado de Plantas Endemicas, Raras o Amenazadas de Espana. Informacion Ambiental, Conservacionismo en Espana, no.3: XIII.
Chenery, E.M. Pers. Comm. 10/1975.
Dray, A.M. (1985). Plantas a Proteger em Portugal Continental. Servico Nacional de Parques, Reservas e Conservacao da Natureza.
Malato-Beliz, J. Pers. Comm. 10/1975.
Sainz Ollero, H. and Hernandez-Bermejo, J.E. (1980). Sintesis Corologica de las Dicotiledoneas Endemicas de la Peninsula Iberica e Islas Baleares. p.23.
Smythies, W. Pers. Comm. 5/1975.

## 272 *Astragalus centralpinus* Braun-Blanquet

**IUCN Category**

**Europe: VULNERABLE**
**World: VULNERABLE**

**ANGIOSPERMAE (Flowering Plants)**

**LEGUMINOSAE (Pea family)**

---

*SUMMARY*: A hairy perennial herb with stems to 1 m tall; long, divided leaves and large heads of yellow flowers. Recorded from Bulgaria and in the south-west Alps in Italy and France, where its grows in grassland and amongst trees on dry sunny slopes. Here, its populations have declined dramatically as a result of encroachment from surrounding vegetation. Although the species can survive for considerable periods in closed vegetation, *Astragalus centralpinus* is essentially a pioneer species of disturbed soils, and interference from trampling livestock of hoeing is necessary for young plants to become established. In the Dauphiné region of France, it has been recorded since 1980, in eight 3.5 x 5 km squares. In Italy, the plants, which are protected by regional law, are not thought to be in immediate danger of extinction. The species is attractive, and is sometimes cultivated as an ornamental.

Member State distribution: France, (including Corsica), Italy.

*THREATS*: Lack of disturbance leading to encroachment of surrounding vegetation.

### ACTION PROPOSED:

1. Key sites should be identified, protected from destruction, managed to ensure sufficient disturbance for regeneration by seedlings.
2. Cultivated material should be propagated, and seed stored, for re-introduction as appropriate.

### SELECTED REFERENCES:

Aymonin, G.G. (1988). *Connaitre les Plantes Protegees. Regions Pyrenées Aquitaine*. Neuchatel, Switzerland, Delachaux and Niestlé, Paris, La fédération Française des sociétés de protection de la nature. p. 18.
Deschâtres, R. (1989). *Astragalus centralpinus*. In Jeanmonod, D. & Burdet, H.M. Notes et contributions à la Flore de Corse. *Candollea*, 44(2): 591-592.
Gardini Peccenini, S. (1984). *Flora da proteggere. Indagine su alcune specie vegetali minacciate o rare in Italia*. Pavia. Pp. 8-9.
Giovonna Dal Vesco. Pers. Comm. 10/1989.
Secrétariat de la Faune et de la Flore (1989). *Inventaires de faune et de flore: Atlas préliminaire des espèces végétales protégées du Dauphiné*. Paris. p. 38.

Taxonomic note: Synonym = *A. alopecuroides* auct. non L. (*Flora Europaea*).

_Genista holopetala_ (Fleischm. ex Koch) Baldacci

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

LEGUMINOSAE (Pea family)

---

SUMMARY: This is a perennial shrub with three lobed leaves which are silky beneath, and small yellow flowers. It occurs in Yugoslavia plus a few metres over the border into Italy, near Trieste, where it grows in calcareous hills at 400 to 1000 m.

THREATS:

ACTION PROPOSED:

1. More field information is required about this plant and the threats to it before conservation action can be planned;
2. Cultivated material should be increased for reintroduction if required.

SELECTED REFERENCES:

## 295 Ononis maveana Ball*

IUCN Category

Europe: ENDANGERED
World: ?

ANGIOSPERMAE (Flowering Plants) LEGUMINOSAE (Pea family)

---

SUMMARY: This is an annual plant, characterised by its sticky-hairy divided leaves and hairy pink and yellow flowers. It grows near the sea in sandy soils in south-west Portugal, and is also known from Morocco. Recognised by the well-known Portuguese botanist Malato-Beliz as an Endangered species back in 1975, due to the restricted size of its populations.

THREATS: Fortuitous disturbance.

ACTION PROPOSED:

1. More field information is needed about this species and the threats to it before action can be planned;
2. Propagate wild collected stocks for the augmentation of the wild populations if necessary.

SELECTED REFERENCES:

Dray, A.M. (1985). Plantas a proteger em Portugal continental. Servico nacional de parques, reservas e conservacao da natureza. Lisbon.
Malato-Beliz, S. Pers. Comm. 10/1975.

Oxytropis deflexa (Pallas) DC. subsp. norvegica Nordh.* IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants) LEGUMINOSAE (Pea family)

---

SUMMARY: This is an endemic subspecies restricted to a small area of Guovdageaindu in Finnmark County, northern Norway. Only two localities are known, both with sizeable populations: the classical locality on Mount Habatvuoppebak'ti in Maze, and in Vir'dneguioka Gorge. It is morphologically as well as geographically quite separate from the other subspecies found in Central Asia and North America. In Norway the taxon is protected under section 13 of the Nature Conservation Act 1970. Attempts have been made to shield the populations in Vir'dneguioka Gorge from damage caused by the regulation of a nearby river for the production of hydroelectricity.

THREATS: Regulation of watercourses for hydroelectricity; collecting.

ACTION PROPOSED:

1. Protect Mount Habatvuoppebak'ti as a nature reserve;
2. Vir'dneguioka Gorge should be protected from further damage, and the population monitored.

SELECTED REFERENCES:

Elvebakk, A. (1984). Flora og vegetasjon i utbyggingsomradet ved Alta/Kautokeino- vassdraget. 1. Okologi, innvandringshistorie og bestandsstatus for masimjelt (Oxytropis deflexa ssp. norvegica). Tromura Naturvit. 42: 1-69.

Hoiland, K. and Laane, M.M. (1989). Flower substances in the extremely disjunct species Oxytropis deflexa and their phyto-geographical implications. Can. J. Bot., 67: 218-224.

Nordhagen, R. (1964). Om Oxytropis lapponica (Wg.) Gaud. og O. Deflexa (Pal.) DC. subsp. norvegica Nordh. Svensk Bot. Tidskr., 58: 129-166.

Skifte, O. (1982). Masimjelt (Oxytropis deflexa (Pall.) DC. subsp. norvegica Nordh.) funnet pa en ny plass ved Altavassdraget. Blyttia, 40: 237-242.

(1984). Blyttia, 42: 157-162.

This conservation summary is based on an account by Dr K. Hoiland, for which WCMC is most grateful.

## 292 Trifolium saxatile All.

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

LEGUMINOSAE (Pea family)

---

SUMMARY: This is a grey-hairy annual, with many stems to 15 cm long, small three-lobed leaves and small heads of hairy whitish flowers. It is endemic to the Alps, where it grows in dry gravel and moraines, sometimes near rivers. The species has been recorded from Austria, France, Italy and Switzerland. Especially threatened in the northern part of its distribution in France by tourism.

Known from various alpines départments in FRance (L'Isère (1 locality); Savoie (2 sites); Haute-Savoie (2 sites); Hautes-Alpes: disappeared in some places but abondant on others (Olivier, 6/90)/

THREATS: Habitat destruction resulting from modification of river banks and tourist developments (latter in France-Olivier).

### ACTION PROPOSED:

Protect the species in the regions of Rhones-Alpes and Provence- Alpes-Cotes d'Azur; conserve seeds from eacxh population to ensure species diversity is properly conserved for possible eventual re-introduction.
(Olivier, pers. comm. 6/90)/

1. Field surveys to identify priority sites, which should be protected from all kinds of habitat damage and destruction;
2. Propagate wild collected stocks for the augmentation of the wild populations if necessary.

### SELECTED REFERENCES:

Olivier, L. Pers. Comm. 6/90.
von Arx, B., Pers. Comm. 5/1990.

Pinguicula crystallina Sibth. & Sm.* IUCN Category

Cyprus: ENDANGERED
Turkey: INSUFFICIENTLY KNOWN
World: INSUFFICIENTLY KNOWN

ANGIOSPERMAE (Flowering Plants) LENTIBULARIACEAE (Butterwort family)

---

SUMMARY: This small insectivorous plant has attractive purple (?) flowers, and sticky-hairy leaves on which it traps small insects. It is confined to Cyprus and south-west Anatolia (Turkey), where it grows in very damp places, such as on wet rocks (often limestone) and boggy ground. In Cyprus, where the species has is confined to the Troödos Mountain Range, the species was once believed Extinct, following road-building works and drought, however, a few plants have since been rediscovered. The Troödos Mountain Range is an igneous belt of pillow lavas, with chalk foothills and spectacular ravines, which supports an impressive number of endemic and rare species. Road construction, tourism, forestry and military activities are a severe threat to this unique and important area. Little is known about the plant's status in Turkey other than it is a very local plant confined to serpentine and limestone rocks between 1050-1700 m. in the Pinus brutia and P. nigra forest belts.

THREATS: Road construction; drought.

ACTION PROPOSED:

1. All sites should be protected form habitat damage and destruction, and collecting should be strictly controlled;
2. Wild origin seed should be stored for future reintroductions if required.

SELECTED REFERENCES:

Caspar, S.J. (1970). Die Gattung Pinguicula (Lentibulariaceae) in Vorderasien. Wiss. Ztschr. Friedrich-Schiller-Univ. Jena 19(3): 275-285.
Davis, P.H. (Ed.) (198?). Flora of Turkey and the East Aegean Islands, 6: 108-109.
Meikle, R.D. (1985). Flora of Cyprus, 2: 1243-1244, illus.

Taxonomic note: Synonyms - P. hirtiflora Ten. (Flora of Turkey and East Aegean Islands).

314 Fritillaria drenovskii Degen & Stoy.

IUCN Category

Europe: RARE
World: RARE

ANGIOSPERMAE (Flowering Plants)

LILIACEAE (Lily family)

---

SUMMARY: This is a beautiful bulbous plant, about 30 cm tall, producing up to eight grey-green lance-shaped leaves and 1-4 deep wine coloured or purple-brown nodding flowers. It grows only in north-east Greece and south-west Bulgaria and northeast Greece, in light woodland and scrub between 1000-1500 m altitude.

THREATS: Over-collecting; over-grazing; tourism; skiing.

ACTION PROPOSED: Ensure strict controls on collecting.

SELECTED REFERENCES:

Grey-Wilson, C. and Mathew, B. (1981). Bulbs. The Bulbous Plants of Europe and their Allies. Collins, London. p. 54, pl. 8.
Sfikas, G. (1989) in CORINE database (Environmental Information Centre).

Fritillaria gussichiae (Degen & Doerfler) Rix — IUCN Category

Europe: RARE
World: RARE

ANGIOSPERMAE (Flowering Plants) — LILIACEAE (Lily family)

---

SUMMARY: F. gussichiae is a bulbous plant, c. 35cm tall, with leafy stems, lance-shaped grey-green leaves, and 1-3 green, broadly bell-shaped flowers, which appear between April and May. Present in one Member State, Greece, but also present in Yugoslavia and Bulgaria. The plant grows on shady rocks amongst scrub, deciduous woodland as well as in alpine pastures between 500-1,500 m. altitude.

THREATS: Over-collecting.

ACTION PROPOSED: Enforce strict controls on collecting.

SELECTED REFERENCES:

Grey-Wilson, C. and Mathew, B. (1981). Bulbs. The Bulbous Plants of Europe and their Allies. Collins, London. p. 54, pl. 8.

Taxonomic note: Synonym = F. graeca var. gussichiae Degen & Dörfler

## SCENTED SQUILL

324 Scilla odorata Link

IUCN Category

Europe: RARE
World: RARE

ANGIOSPERMAE (Flowering Plants)

LILIACEAE (Lily family)

---

SUMMARY: The Scented Squill is a very attractive small bulbous plant with grass-like leaves and short stems bearing 4 to 10 attractive, fragrant blue flowers. It grows in southern Spain and Portugal, at low altitudes, in sandy places amongst grass and beneath pines. In Portugal, only six sites have ever been recorded.

THREATS: Over-collection; tourism; building.

ACTION PROPOSED:

1. All sites should be protected from habitat damage and destruction, and collecting should be strictly controlled;
2. Propagate wild collected stocks for the augmentation of the wild populations if necessary.

SELECTED REFERENCES:

Grey-Wilson, C., and Mathew, B. (1981). Bulbs. The Bulbous Plants of Europe and their Allies. Collins, London. p. 104.
Malato-Beliz, J. Pers. Comm. 3/1990.

Lythrum thesioides M.Bieb. IUCN Category

Europe: EXTINCT
World: ?

ANGIOSPERMAE (Flowering plants) LYTHRACEAE (Loosestrife family)

---

SUMMARY: This upright, hairless annual grows to about 40 cm tall and has narrow greyish leaves and tiny green and pink flowers. Now considered Extinct in Europe, having disappeared from France, Italy and Hungary. In southern France it once grew in the départements of Gard, Vaucluse and Drome, where recent searches (1986) have proved unsuccessful. Its habitat of lake margins and other wet places is reported to have been destroyed by drainage operations and therefore the species is very unlikely to reappear. The species is also recorded from the USSR, where it is already known to be Vulnerable (sensu IUCN) in the European part. A record from Asia USSR is thought likely to be a different taxon. The plants are thought to require some disturbance such as regular cleaning of vegetation, or fluctuating water levels, to thrive.

THREATS: General habitat destruction, especially drainage.

ACTION PROPOSED:

1. If any sites remain in the member states of the Berne Convention, they should be strictly protected and managed to maintain the populations;
2. Previous locations should be checked to see if they still appear to be suitable for this species: if any do, and the species is confirmed to be extinct at these sites, reintroductions should be considered.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les Plantes Protégées. Région Méditerranéenne. Neuchatel, Switzerland, Delachaux and Niestlé, Paris, La fédération Française des sociétés de protection de la nature. p. 34.
Cook, D.D.K. Pers. Comm. 5/1990.
Lesouef, J.Y. Pers. Comm. 5/1990.
Secrétariat de la Faune et de la Flore (1989). Inventaires de faune et de flore: Atlas préliminaire des espèces végétales protégées du Dauphiné. Paris. p. 99.

Taxonomic note: Synonym = L. geminiflorum Bertol.

331 Kosteletzkya pentacarpos (L.) Ledeb. IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) MALVACEAE (Mallow family)

---

SUMMARY: This is an upright perennial herb which grows to 2 m tall, and has large leaves with brownish hairs, and attractive lilac-pink flowers. It grows by riversides and somewhat brackish marshes in south Europe from east Spain to south east Russia and Iran, including the Balearic Is, Corsica, Italy and Spain. In Spain, it is known in the marshes of La Albufera in Valencia, El Prat (Llobregat Delta) near Barcelona, and in Minorca. In Italy it is now very rare, and is extinct almost everywhere, due to land reclamation and embankment.

THREATS: Building construction; drainage; agriculture.

ACTION PROPOSED:

1. More field information is needed to identify key sites for conservation;
2. Key sites should be protected from habitat damage and destruction;
3. This species should be propagated ex situ, and seed stored, for possible reintroduction into the natural habitat.

SELECTED REFERENCES:

Barreno, E. (Eds)(1984). Listado de Plantas Endemicas, Raras o Amenazadas de Espana. Informacion Ambiental. No. 3.
Leon, C.J. Pers. Comm. 5/1985.
Marin, J.R. Pers. Comm. 9/1984.
Pignatti, S. et al. (1980). Flora d'Italia p. 95.

# SLENDER NAIAD

Najas flexilis (Willd.) Rostk. & W.L.Schmidt

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

NAJADACEAE (Naiad family)

---

SUMMARY: Slender Naiad is a small, brittle annual, c.20 cm tall, which grows submerged in deep lakes, and is most often recorded when the narrow leaves and tiny flowers are washed ashore or caught by anglers. The species requires clear water, moderately rich in nutrients, with a neutral pH. It is a weak competitor whose populations fluctuate constantly, but which often respond well to disturbance of the vegetation or changes in water level. It has a boreal and circum-polar distribution, growing across northern Europe, USSR and North America. The species is recorded from no less than 8 Member States: Denmark, Finland, FRG, Ireland, Norway, Sweden, Switzerland and the UK. It is rare or threatened in all these countries with the exception of Ireland. In the latter, 19 sites are known in the west of the island, many discovered during a recent survey by divers. Its European decline is believed to be due mainly to acid rain. The Swiss and possibly Danish populations are already considered Extinct. The Danish plants were last seen in 1961 in dune slack lakes, where it is hoped the plant may still reappear since the seeds are known to retain their viability for a long time.

THREATS: Pollution; acidification of lakes; eutrophication and overgrowth of vegetation; ?drainage.

ACTION PROPOSED:

1. Propagate cultivated material as a high priority and store seed, for future re-introductions when the habitat conditions become suitable.
2. Promote the implementation of very high standards for water and air quality, including the preventing of run-off from fertilisers, peat-digging and forestry around lakes and, Europe-wide, promote strict reductions in emissions of sulphur and nitrogen across Europe;
3. Protect all major sites from habitat damage and destruction;
4. Support research and monitoring programmes into the population biology and decline of the species.

SELECTED REFERENCES:

Alanen, A. Pers. Comm. 1/1990.
Blab, J., Novak, E., Trautmann, W. and Sukopp, H. (1984). Rote Liste der Gefährdeten Tiere und Pflanzen in der Bundesrepublik Deutschland.
Haeupler, H. and Schönfelder, P. (1988). Atlas der Farn und Blütenpflanzen der Bundesrepublik Deutschland. Stuttgart. map 1969.
Hultén, E. & Fries, M. (1986). Atlas of North-European vascular plants.
Lojtnant, B. and Worsoe, E. (1977). Forelobig Status over den Danske Flora.
Perring, F.H. & Farrell, L. (1983). British Red Data Books: Vascular plants.
Uhanalaisten eläinten ja kasvien suojel.(1986). (Finnish Red Data Book).

334 Najas tenuissima (A.Braun) Magnus

IUCN Category

Europe: **VULNERABLE**
World: **VULNERABLE**

**ANGIOSPERMAE (Flowering Plants)**

**NAJADACEAE (Naiad family)**

SUMMARY: This is an aquatic annual, which grows quite submerged in shallow water, in lakes with clear, more or less neutral water, or in estuaries with low salinity. The fossil evidence shows that the species was more widespread in the warmer post-glacial period, but now it is almost certainly confined to north Europe, where it grows in Finland and the USSR. In Finland only about eight localities are known, all in the south of the country. The species is vulnerable to changes in the water level and to any sort of water pollution, be it enrichment or acidification.

THREATS: Pollution; changes in water level.

ACTION PROPOSED:

1. Strict implementation of very high standards for air and water quality;
2. All sites should also be protected from artificial changes in the water level.

SELECTED REFERENCES:

Alanen, A. Pers. Comm. 1/1990.
Hultén, E. and Fries, M. (1986). Atlas of North European vascular plants. Koeltz Scientific Books. map 125.
Uhanalaisten eläinten ja kasvien suojelutoimikunta (1986). Uhanalaisten eläinten ja suojelutoimikunnan: III. Hotade växter i Finland. Helsinki. p.44.

# KOMPER'S ORCHID

Comperia comperiana (Steven) Aschers. & Graebner

IUCN Category

Europe: ENDANGERED
World: ?

ANGIOSPERMAE (Flowering Plants)

ORCHIDACEAE (Orchid family)

---

SUMMARY: This is a large spectacular orchid which can grow up to half a metre in height. The helmet of the flower is green, dark brown or purple, with a white, pink or reddish lip. The lips end in long streamers, which give the plant a unique and attractive appearance. Komper's Orchid grows in 2 Member States, Greece and Turkey. In the former, it grows in limited numbers in small colonies on the East Aegean islands of Kos, Rhodes and Lesbos. Only one site is known on Rhodes; on Lesbos, in 1988, only 3 plants were known to be surviving at the classic locality. It is thought that other sites may await discovery on these islands although this orchid is always likely to be extremely scarce and vulnerable to extinction from a variety of threats, not least collecting. Outside the Member States, the species has been found in Lebanon, Iran and the Ukraine. The plant is normally to be found in coniferous woodlands and olive groves on limestone soils up to 2000 m.

THREATS: Collection of the rhizomes for the orchid trade; distrubance from photographers; road construction; fires; over-grazing.

ACTION PROPOSED:

1. Conserve the habitats of the remaining colonies. This needs to be done discreetly to avoid attracting collectors and photographers to the more fragile populations;
2. Support the implementation of the CITES convention for this species;
3. Support research to perfect the micropropagation of terrestrial orchid species, and include this species in such research. This will make available material for re-introduction, if appropriate, and for removing pressures of collecting from the wild populations.

SELECTED REFERENCES:

Broussalis, P. (1989). Comperia comperiana, the elusive orchid. Nature - Bulletin of the Hellenic Society for the Protection of Nature, 44/45: 4-6, 43-44.
Carlström, A. (1987). A survey of the flora and phytogeography of Rhodos, Simi, Tilos and the Marmaris peninsula. Lund.
Davis, P.H. (Ed.). Flora of Turkey.
Kalteisen, M. and Willing, E. (1981). Verbreitungskarten der Orchideen von Rhodes. AHO Mitteilungsblatt, Beitrage zur Erhaltung und Erforshung Heimischer Orchideen, 13(4): 402.
Kristodoulaki. Pers. Comm. 1986.

Taxonomic note: Synonym = C. taurica C. Koch.

Turkey – Used to make Salep, a traditional hot drink in Turkey – [illegible] tubers. Once abundant at Yatagan (Mugla). (Ekim et al pers comm 26.[illegible] 90)

# LADY'S SLIPPER ORCHID

937 *Cypripedium calceolus* L. **IUCN Category**

Europe: **VULNERABLE**
World: **NOT THREATENED**

ANGIOSPERMAE (Flowering Plants) ORCHIDACEAE (Orchid family)

---

*SUMMARY*: Lady's Slipper Orchid is one of the most celebrated and spectacular of Europe's orchids. It grows in clumps produced from an underground rhizome, and has stems bearing 3-5 leaves, and 1-3 magnificent flowers. The sepals and tepals are brownish purple or claret coloured, sometimes spirally twisted, and the lip is inflated into a golden pouch lined with crimson spots. Its habitat ranges from deciduous and coniferous woodland, to open scrub and alpine meadows, on calcareous soils. The plant is distributed across north and central Europe to north-east Asia and North America. Throughout much of its western European range the species has been decimated by over-collecting, Sweden remaining the only Member State out of 14 where the plant is neither rare, threatened nor Extinct. In Belgium and Luxembourg the species is Extinct and in the UK it is on the verge of extinction where individual plants are now protected in cages. Lady's Slipper Orchid is a choice horticultural species, and although mature plants last for many years in cultivation and are easy to maintain, it is only very recently that it has been possible, using specially adapted micropropagation techniques, to grow plants from seed.

Member State distribution: Austria (V), Belgium (Ex), Denmark (V), Finland (V), France (R), FRG (E), Hungary (V), Italy (V), Luxembourg (Ex), Norway (R), Spain (V), Sweden (nt), Switzerland (V) and UK (E).

*THREATS*: Threats vary from country to country but include: over-collecting; abondonment of woodland grazing and coppicing; modern forestry; over-grazing during growing period.

*ACTION PROPOSED*:

1. Support the adoption and implementation of legislation to prohibit collecting of this species;
2. Protect key sites from habitat damage and degradation;
3. Support research into the micropropagation of terrestrial orchids for the plant trade and as a source of material for future re-introductions, if appropriate.

*SELECTED REFERENCES*:

Aymonin, G.G. (1988). *Connaitre les Plantes Protegees. Regions Ouest-nord-est*. Neuchatel, Switzerland, Delachaux and Niestle, Paris.
Lawalree, A. (1981). *Plantes sauvages protegees en Belgique.* Jardin Botanique Nationale de Belgique, Meise. p.27.
Lambinon, J. Pers. Comm. 3/1990.
Lojtnant, B. and Worsoe, E. (1977). *Forelobig Status over den Danske Flora*. Reports from the Botanical Institute Univ. Aarhus, No. 2. Pp. 98-99.
Wood, J., *et al*. (1984). Plants in Peril, 2. *Kew Mag*.,: 139-142.

# BOG ORCHID

Hammarbya paludosa (L.) Kuntze — IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants) — ORCHIDACEAE (Orchid family)

---

SUMMARY: This small and inconspicuous green-flowered orchid is known from acid bogs in north and central Europe, with a circumpolar range extending to temperate northeast Asia and north America. The Bog Orchid grows in association with Sphagnum species in one of Europe's most threatened habitats, peatland, which has suffered widespread damage due to peat-digging, and land drainage for agricultural reclamation. As a result, this elusive plant has become threatened in 9 of the 12 Member States in which it grows, these being: Austria, Belgium, Denmark, Finland, France, FRG, Ireland, Netherlands, Switzerland. Although not as yet threatened in the UK, Norway and Sweden, this orchid has been lost from at least 50% of its British localities, due to habitat destruction, and may be declining elsewhere. More specifically, the Bog Orchid has declined in Denmark and Ireland by 90%, in the Netherlands by 85%, and Belgium by 85%. Urgent conservation measures are needed to reverse this horrifying trend.

THREATS: Land drainage; peat-digging; reclamation for agriculture, forestry or other developments, throughout Europe .

ACTION PROPOSED:

1. Support the special protection of all major localities of European importance, including all remaining sites in those contracting parties where the species has declined by 80+%;
2. Ensure that damaging activities such as forestry and peat-digging are directed away from all places where the Bog Orchid grows;
3. Support research to perfect the propagation of terrestrial orchid species, and include this species (which may prove quite easy to propagate vegetatively as the leaves have rootable "buds" on their margins) in such research, so that stocks are available to re-stock the wild populations, if appropriate.

SELECTED REFERENCES:

Curtis, T.G.F. and McGough, H.N. (1988). The Irish Red Data Book 1: Vascular Plants. Dublin. p. 76.
Kreutz, C.A.J. (1987). De verspreiding van de inheemse orchideën in Nederland. Wetensch. Bibl. KNNV 44. Zutphen.
Mennema, J., Quené-Boterenbrod, A.J. and Plate, C.L. (Eds) (1985). Atlas van de Nederlandse Flora : Vol. 2. Utrecht. p. 166.
Niklfeld, H. (1986). Rote Listen Gefährdeter Pflanzen Österreichs.
Perring, F.H. & Farrell, L. (1983). British Red Data Books: 1.Vasc. Plants.
Weeda, E.J. Pers. Comm. 5/1990.

## FEN ORCHID

341 Liparis loeselii (L.) Rich.

**IUCN Category**

Europe: **ENDANGERED**
World: ?

ANGIOSPERMAE (Flowering Plants)

ORCHIDACEAE (Orchid family)

---

SUMMARY: Fen Orchid is a small and rather inconspicuous plant producing just 2 leaves and a flower spike about 20 cm tall, bearing 3-8 small yellowish green flowers. It grows in wet places particularly bogs, dune slacks, fens and wet meadows, where the surrounding vegetation is not too dense. The number and size of the plant's populations have declined dramatically throughout its wide European distribution, due mostly to widespread drainage and agricultural disturbances. Today the species has become rare or threatened in every one of the 13 Member State countries in which it occurs: Austria (V), Belgium (E), Denmark (V), Finland,(V), France (V). FRG (E), Hungary (E), Italy (E), Netherlands (R), Norway (Ex), Sweden (R), Switzerland (V) and UK (E).

In the UK, although protected by law from picking and uprooting, some populations have been destroyed by land developments, tipping and forestry, and also by neglect, where protected areas have been under-grazed, or dunes over-stabilised. Elsewhere, as in Denmark, collecting has been a problem. In the Netherlands, it has colonised land reclaimed from the sea, but sites have suffered elsewhere.

THREATS: Drainage; tipping; forestry; fertilizers; under-grazing; over-stabilisation of sand dunes; collecting.

ACTION PROPOSED:

1. In those countries in which the species has declined significantly, protect sites from habitat damage and destruction;
2. Maintain traditional land management practices where these have proved compatible with the plant's survival.
3. Support research into the micropropagation of terrestrial orchids for future re-introductions, if appropriate.

SELECTED REFERENCES:

Clements, M. Pers. Comm. 6/1983.
Landolt, E. (1982). Geschützte Pflanzen in der Schweiz, 3rd Ed.
Lavalrée, A. (1981). Plantes Sauvages Protégées en Belgique.
Perring, F.H. & Farrell, L. (1983). British Red Data Books: Vascular Plants.
Secrétariat de la Faune et de la Flore (1989). Inventaires de faune et de flore: Atlas préliminaire des espèces végétales protégées du Dauphiné.
Uhanalaisten eläinten ja kasvien suojelutoimikunta (1986). Uhanalaisten eläinten ja suojelutoimikunnan: III. Hotade växter i Finland. Helsinki.
von Arx, B., Pers. Comm. 5/1990.
Whitten, A. (1990). U.K. plant species recovery programme, unpublished report. Nature Conservancy Council.
Weeda, E.J. Pers. Comm. 5/1990.

## ONE-LEAVED BUTTERFLY ORCHID

Platanthera obtusata (Pursh) Lindl. subsp. oligantha (Turcz.) Hulten

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

ORCHIDACEAE (Orchid family)

---

SUMMARY: The One-leaved Butterfly Orchid is a short, slender plant, with a single basal leaf, and up to six delicate green and white flowers. Confined to 2 Member States, Norway and Sweden, where it is considered Rare in the former and Endangerd in the latter. Also present in the USSR, where its status is unknown. The plants grow on calcareous mountains, in heaths, birch and pine woods, often on sloping ground where water flows laterally through the soil; a habitat which is highly threatened in Sweden. Swedish localities are confined to Abisko in Norrbotten County, and in Norway 10 localities have been recorded in the Troms and Finnmark counties, one of which, Mount Jav'reoaivit, is a nature reserve. The species is already protected under Swedish and Norwegian law.

THREATS: ? Habitat destruction.

ACTION PROPOSED:

1. All sites in Sweden, and key sites in Norway, should be protected from habitat damage and destruction;
2. Support research to perfect the micropropagation of terrestrial orchid species, and include this species in such research, so that stocks are available to re-introduce the plant back to the wild, if appropriate.

SELECTED REFERENCES:

Grey-Wilson, C., and Mathew, B. (1981). Bulbs. The Bulbous Plants of Europe and their Allies. Collins, London. p. 251.
Hoiland, K. (in prep.). Sibirnattfiol (Platanthera obtusata subsp. oligantha) - den forjettede orkide.
Ingelög, T. Pers. Comm. 1/1990.

## SUMMER LADY'S TRESSES

349 Spiranthes aestivalis (Poiret) L.C.M.Richard

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

ORCHIDACEAE (Orchid family)

---

SUMMARY: This pretty, fragrant orchid has an underground tuber, narrow basal leaves and flower spikes bearing a single spiral of up to 20 small white flowers. It grows in wet meadows, marshes and bogs in south, west and central Europe, including Austria, France (including Corsica), F.R.G., Greece (?), Hungary, Italy, Sardinia (?), Spain and Switzerland, but it has seriously declined in many of these countries. Summer Lady's Tresses formerly also grew in Belgium, the Netherlands, Portugal, U.K. and the Channel Islands of Guernsey and Jersey, but is now thought to be extinct there, mainly due to loss of the sensitive wetland habitat, but also to over-collecting.

THREATS: Drainage. Over-collecting.

ACTION PROPOSED:

1. Support legislation to protect this species from over-collecting;
2. Protect sites from habitat damage such as lowering of the water table;
3. Support research to perfect the micropropagation of terrestrial orchid species, and include this species in such research, so that stocks are available to reinforce the wild populations if necessary.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaître les Plantes Protegées. Regions Ouest-nord-est. Federation Française des Sociétés de Protection de la Nature. Neuchatel, Switzerland, Delachaux and Niestlé, Paris. p. 29.
Blab, J., Novak, E., Trautmann, W. and Sukopp, H. (1984). Rote Liste der Gefährdeten Tiere und Pflanzen in der Bundesrepublik Deutschland. Ed.4. Greven. p. 146.

Lawalrée, A. (1981). Plantes Sauvages Protegées en Belgique. Jardin Botanique Nationale de Belgique, Meise. p. 29.
Mennema, J., Quené-Boterenbrood, A.J. and Plate, C.L. (Eds)(1980). Atlas van de Nederlandse Flora, vol. 2. p. 190.
Niklfeld, H. (1986). Rote Listen Gefährdeter Pflanzen Östereichs. Bundesministeriums für Gesundheit und Umweltschutz. p. 98.
Perring, F.H. and Farrell, L. (1983). British Red Data Books: 1. Vascular Plants, 2nd ed. RSNC. Pp. 67-68.
Secrétariat de la Faune et de la Flore (1989). Inventaires de Faune et de Flore: Atlas Préliminaire des Espèces Végétales Protégées du Dauphiné. Paris. p. 135.

# CRETAN DATE PALM

*Phoenix theophrasti* Greuter IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants) PALMAE (Palm family)

---

SUMMARY: The Cretan Date Palm, one of only two palm species that are native to Europe, was described as late as 1967. It is an attractive, slender tree up to 12 metres tall, often with several trunks and a cluster of bushy shoots at the base with a crown of compound leaves 2-5 metres long. It occurs in a few gullies and valleys leading down to the sea, where the water-table is high and the sites are sometimes seasonal flooded. It is restricted to Greece and Turkey, where in the former all populations appear to have suffered from tourist disturbances, espacially camping, fires and general trampling pressure. Five main Cretan populations are known, the largest one, at Vai in the north-east of the island, extends for 1 kilomentre along a valley. Because of continuous tourist and film-making disturbances to this beautiful palm-fringed location, this population is now protected within a nature reserve to allow regeneration of the remaining trees. Elsewhere, individual trees and fragmentary groves are scattered in Crete and some of the islands, and the species has recently been reported from similar habitats near Marmaris on the coast of south-west Turkey (Datca Peninsula). In the latter, conservation needs have yet to be established (see Boydak, 1989). The palms remaining today are probably a relic of a much wider distribution.

*P. theophrasti* is a close relative of the date palm of commerce, from which it differs principally in the smaller and less fleshy fruits. Wild origin material is widespread in cultivation and is known from 15 botanic gardens.

THREATS: Tourism; fire.

ACTION PROPOSED:

1. Ensure effective management at the Vai nature reserve on Crete;
2. Undertake field-work to survey all remaining Cretan sites outside the nature reserve, and establish additional protection where necessary, possibly at Preveli on the south coast;
3. Determine the need to establish protected areas at the Turkish sites, and take appropriate conservation action.

SELECTED REFERENCES:

Barclay, C. (1974). A new locality of wild *Phoenix* in Crete. *Ann. Mus. Goulandris*, 2: 23-29.
Greuter, W. (1967). Beiträge zur Flora der Südägais 8. *Phoenix theophrasti*, die wilde Dattelpalme Kretas. *Bauhinia*, 3: 243-250.
Leon, C.J. Pers. Comm. 5/1981.
Lucas, G. and Synge, H. (1978). *The IUCN Plant Red Data Book*. IUCN. p.417-418.
Snogerup, S. (1985). The Mediterranean Islands. Gomez-Campo, C. (Ed.) *Plant Conservation in the Mediterranean Area*. Pp. 163-165.
Turland, N. Pers. Comm. 3/1990.

354 Papaver lapponicum (Tolm.) Nordh. IUCN Category

Europe: VULNERABLE
World: INDETERMINATE

ANGIOSPERMAE (Flowering Plants) PAPAVERACEAE (Poppy family)

---

SUMMARY: P. lapponicum is a tufted perennial Poppy, with yellow sap, whitely-hairy divided leaves and attractive yellow flowers. It is a plant of Arctic Europe, occurring in Norway and the USSR. In Norway it grows on upland stony soils and moorland on Vassbotnfjell in the far north, and it has also colonised river gravels and damp fields at lower altitudes in the area, particularly at Storvatn and Burfjorddalen. At lower localities, the plants are thought to have been introduced.

THREATS: Dumping; shading; collecting; natural fluctuations in population size.

ACTION PROPOSED:

1. Support local proposals for a nature reserve at Vassbotnfjell, to include sites of P. lapponicum, and bye-laws to protect the site's vegetation;
2. All sites should be protected from habitat damage and degredation.

SELECTED REFERENCES:

Birks, H.J.B. Pers. Comm. 5/1990.
Hoiland, K. (1986). Utsatte planter in Nord-Norge Okoforsk Rapport 1986:2. Unpublished report.

Taxonomic note: Some botanists consider the Norwegian plants to belong to two separate endemic subtaxa.

## MOCANO

Pittosporum coriaceum Dryander ex Aiton

IUCN Category

Madeira: **EXTINCT/ENDANGERED**
World: **EXTINCT/ENDANGERED**

ANGIOSPERMAE (Flowering Plants)

PITTOSPORACEAE (Pittosporum family)

---

SUMMARY: Mocano (P. coriaceum) is a very attractive evergreen tree reaching c. 8 m in height, with smooth, grey bark and thick, blunt, leathery leaves. Its fragrant flowers appear in May and June giving rise, later in the year, to woody, ovoid fruit capsules up to 2 cm long. The species is believed to possess various medicinal properties. Confined to the Atlantic Islands of Madeira and the Canary Islands, it is now Extinct in the latter and nearly so in the former. In Madeira it has always been rare, growing in scattered mountain localities on cliffs and in ravines within the increasingly degraded tracts of laurisilva forest. The last recorded sites were isolated stations near the north coast and only further field survey can confirm whether the species continues to persist in the wild. Competition from the invasive Australian exotic plant species P. undulatum may have contributed to the decline of the native Pittosporum, although the main threat is believed to be disturbance from tourist activities, associated with mountaineering and walking. At one time, cultivated material was available in local botanic gardens and others on the European mainland.

THREATS: Tourism, mainly climbers and walkers; suspected competition from invasive alien plants.

ACTION PROPOSED:

1. Undertake field surveys to locate any individuals remaining in the wild, and if possible collect seed;
2. Investigate possible sources of cultivated material;
3. Using material from '1' and/or '2' bulk up in cultivation and plan a re-introduction programme, if appropriate.

This conservation summary is based upon information provided by Dr J.R. Press, to whom WCMC are most grateful.

## 359 Armeria velutina Welw. ex Boiss. & Reuter

IUCN Category

Europe: **VULNERABLE**
World: **VULNERABLE**

ANGIOSPERMAE (Flowering Plants)

PLUMBAGINACEAE (Thrift family)

---

SUMMARY: A highly localised member of the Thrift family, growing in scrub on dry acid sand systems (littoral and sublittoral) near the coast in south-east Portugal and south-west Spain. As its name suggests, *Armeria velutina* is a rather velvety herbaeous plant growing to a height of c.50 cm and producing heads of pink or white papery flowers. Some of the populations occur within the Coto de Donana National Park.

THREATS: Housing and hotel developments; road construction.

ACTION PROPOSED:

1. More field information is required about this plant and its cause of decline before conservation action can be planned;
2. Cultivated material should be propagated, and seed stored, for re-introduction, if appropriate.

SELECTED REFERENCES:

Barreno, E. (1984). Listado de Plantas Endemicas, Raras o Amenzadas de Espana. *Informacion Ambiental (Conservacionismo en Espana), no.3, XIII.*
Gomez-Campo, C. Pers. Comm. 11/1975.
Malato-Beliz, E. Pers. Comm. 10/1975.
Valdés, B., Talavera, S. and Fernandez-Galiano, E. (Eds) (1987). *Flora Vascular de Andalucia Occidental*, 1: 302.

Polemonium boreale Adams

IUCN Category

Europe: ENDANGERED
World: ?

ANGIOSPERMAE (Flowering Plants)

POLEMONIACEAE (Phlox family)

---

SUMMARY: P. boreale is a perennial, c.15 cm tall, which smells foetid when bruised, and produces attractive blue flowers. It grows in gravelly and sandy places in Arctic Europe, and is present in only 1 Member State, Norway, where it is known only from east Finnmark in the far north. Here it is thought to be native in stabilised dunes near the sea, the main population, however, survives in a churchyard where the plants grow with other dune-slack relicts (such as moonwort, Botrychium lunaria) and more weedy species, amongst the gravestones. Here P. boreale may be threatened by hybridisation with the ornamental P. caeruleum planted in the churchyard. By the beginning of this century the native population was already recorded as severely reduced, almost certainly as a result of increased human settlement in the area. The churchyard site is protected, and the species is protected by local laws.

THREATS: Hybridisation; urbanisation.

ACTION PROPOSED:

1. All sites should be protected from habitat damage and destruction, and as far as possible from the danger of hybridisation;
2. It is suspected that additional sites might be found outside the area covered by legal protection, so that inclusion of the species in national legislation should be considered.

SELECTED REFERENCES:

Birks, H.J.B. Pers. Comm. 5/1990.
Hoiland, K. (1987). Utsatte planter in Nord-Norge. Spesiell del. - Okoforsk Rapport 1986:2. Pp. 58-62.

# SHORE DOCK

368 Rumex rupestris Le Gall

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) POLYGONACEAE (Dock and Knotweed family)

---

SUMMARY: This plant has erect, branched stems 30-100 cm tall, oblong to narrowly oval, rather bluish-green leaves, and clusters of small flowers the fruits of which bear 3 corky floats by which they are dispersed in sea-water. It is not distinguished in appearance and might be thought to be just another wayside dock. Nevertheless, it is one of world's rarest docks, restricted to the Atlantic coasts of Europe from N. Spain to Wales. The species is known from N.W. Spain (Galicia), N.W. France (Brittany and Normandy), the Channel Islands and the United Kingdom (Cornwall, S. Devon and Gwynedd). The localities are scattered and nowhere is it reported to be common. The habitat of the Shore Dock is the upper part of seashores, especially where a stony beach lies adjacent to a cliff that is damp with fresh water seepage, but sometimes in damp places in sand-dunes. The plant has been considerably reduced in numbers in recent years. Studies in Britain have shown that, although widespread at the beginning of this century, the Shore Dock is now restricted to 12 sites. At 8 of these in Devon and Cornwall that were visited in 1989, some 250 plants were present, 150 of them at just 3 of the stations. Only 43 plants are known in Wales, in two adjacent localities. Wild origin material is in cultivation in the University Botanic Gardens of Bristol and Cambridge.

THREATS: Seaside building development; trampling by humans; afforestation of sand-dunes.

ACTION PROPOSED: The species' habitat should be set aside, with restricted public access.

SELECTED REFERENCES:

Akeroyd, J.R. Pers. Comm. 10/1989.
Aymonin, G.G. (1988). Connaitre les plantes protegees. Regions ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestlé, Paris, La fédération Française des sociétés de protection de la nature. p.31.
Farrell, L. Pers. Comm. 10/1989.
Jalas, J. and Suominen, J. (Eds) (1972-). Atlas Florae Europaeae: Distribution of vascular plants in Europe. The committee for mapping the Flora of Europe and Societas Biologica Fennica Vanamo, Helsinki. p.59.
Lesouef, J.Y. (1986). Les Plantes Endemiques et subendémiques les plus Menacées de France. (Unpublished report). p. 32.
Morgan, V. Pers. Comm. 11/1989.
Perring, F.H. and Farrell, L. (1983). British Red Data Books: 1. Vascular Plants, 2nd ed. RSNC. p.32.

This conservation summary is based on an account by Dr. J.R. Akeroyd, for which WCMC is most grateful.

# SHETLAND PONDWEED

Potamogeton rutilus Wolfg. IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) POTAMOGETONACEAE (Pondweed family)

---

SUMMARY: Shetland Pondweed is a slender, submerged aquatic, c.45cm tall, with narrow brownish to bright green, rather stiff leaves, and spikes of tiny flowers. Throughout much of its range the species does not set seed, spreading instead by specialised winter shoots, known to botanists as turions. The plant's habitat is unpolluted mesotrophic or eutrophic lakes and adjacent streams, usually covering fine sediments. This habitat, especially in northern Europe, has however become extremely vulnerable to pollution, as well as drainage operations and HEP schemes. As a result, the species is now rare or seriously threatened in all 7 Member States in which it grows: Denmark, Finland, France, FRG, Norway, Sweden and UK. Some of the largest remaining populations occur in Scotland, particularly in Shetland, the Hebrides as well as on the mainland. Here it grows near limestone and in the 'machair lochs', situated at the junction of calcareous sand and acidic rock, as part of a rich and fragile aquatic plant community, which is dependent on very low levels of air and water pollution. Elsewhere, the species is severly threatened with extinction.

THREATS: Air and water pollution; drainage; dam construction; hydro-electric power generation.

ACTION PROPOSED:

1. Strict implementation of very high standards for air and water quality;
2. Protection all sites from artificial changes in water level;
3. Support research and monitoring programmes to improve knowledge of the population biology of the species and precise causes of decline.

SELECTED REFERENCES:

Blab, J., Nowak, E., Trautmann, W., and Sukopp, H. (1984). Rote Liste der Gefährdeten Tiere und Pflanzen in der Bundesrepublik Deutschland. Ed.4.
Haeupler, H. and Schönfelder, P. (1988). Atlas der Farn und Blütenpflanzen der Bundesrepublik Deutschland. Stuttgart. map 1954.
Hoiland, K. (1986). Utsatte planter in Nord-Norge Okoforsk Rapport 1986:2.
Hultén, E. and Fries, M. (1986). Atlas of North European vascular plants.
Lesouef, J.Y. (1986). Les Plantes Endemiques et subendémiques les plus Menacées de France. (Unpublished report). p.65.
Perring, F.H. and Farrell, L. (1983). British Red Data Books: Vascular Plants.
Preston, C.D. Pers. Comm. 12/1989.
Uhanalaisten eläinten ja kasvien suojel. (1986). (Finnish Red Data Book).

This conservation summary is based on an account by Ms A. Alanen, for which WCMC is most grateful.

370 **_Androsace cylindrica_ DC.** **IUCN Category**

**Europe: VULNERABLE**
**World: VULNERABLE**

**ANGIOSPERMAE (Flowering Plants)** **PRIMULACEAE (Primrose family)**

---

SUMMARY: An alpine species endemic to the central and western Pyrenees, occurring in both France and Spain. It is a tufted perennial plant, with branched stems on which the withered leaves persist, forming columnar shoots. The flowers, borne amongst the hairy leaves, are pink with yellow throats. The habitat of this _Androsace_ is calcareous rocks and cliffs in montane summits, between 2000 and 3400 m. Some of the stations are inaccessible, but the more easily reached localities are severely threatened by collectors, because of the plant's horticultural value. Today, it is widely grown in gardens.

THREATS: Collecting.

ACTION PROPOSED:

1. Protect all sites from habitat damage and destruction;
2. Strictly control collecting at all sites, and encourage horticulturalists to use artificially propagated material.

SELECTED REFERENCES:

Aymonin, G.G. Pers. Comm. 8/1976.
Aymonin, G.G. (1988). _Connaitre les Plantes Protegees. Regions Pyrenees Aquitaine_. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p. 24.

Androsace pyrenaica Lam.

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

PRIMULACEAE (Primrose family)

---

SUMMARY: A. pyrenaica is a densely tufted alpine perennial which forms deep, hemispherical cushion-like plants, giving rise to many small, overlapping leaves and small white and yellow flowers. It is endemic to the east and central Pyrenees and grows in both France and Spain, on rocks and screes. All species of Androsace are protected from collecting under French law.

THREATS: ? Collecting.

ACTION PROPOSED:

1. Gather more field information about this plant, including its cause of decline, in order to plan appropriate conservation action;
2. Propagate wild collected stocks for re-introduction, if appropriate.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les Plantes Protegees. Regions Ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p. 16.
Chittenden, F.J. (Ed.) (1974). The Royal Horticultural Society Dictionary of Gardening, vol. I. Clarendon, Oxford. p. 110.

## 375 *Primula allionii* Loisel.

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants) PRIMULACEAE (Primrose family)

---

**SUMMARY:** *P. allionii* is an attractive, small, downy perennial with a rosette of fleshy, sticky-hairy leaves and large pink to purple flowers on short stalks. It is known only from the Maritime Alps of France and Italy, where it grows on wet, shaded calcareous cliffs at 500 to 2000 m. The species was identified as a vulnerable one as long ago as 1975, probably due to collecting pressures which may continue to exist today. All the French alpine primroses are now officially protected by law.

**THREATS:** No information, but probably collecting.

**ACTION PROPOSED:**

1. More field information is needed about this species in order to identify threats and requirements;
2. Wild origin material should be propagated and increased for restocking the wild populations if appropriate.

**SELECTED REFERENCES:**

Aymonin, G.G. Pers Comm. 8/1975.
Aymonin, G.G. (1988). *Connaitre les plantes protegees. Regions ouest-nord-est*. Neuchatel, Switzerland, Delachaux and Niestlé, Paris, La fédération Française des sociétés de protection de la nature. p. 16.
Corti, R. (1959). Specie rare o minacciate della flore Mediterranea in Italia. In: IUCN. Animaux et vegetaux rares de la Region Mediterraneenne. *Proc. IUCN 7th Technical Meeting, 1958*. Vol.5.
Filipello, S. Pers. Comm. 5/1978.
Pignatti, S. *et al*. (1980). *Flora d'Italia*. p.273.
Walters, S.M. Pers Comm. 5/1978.

Primula egaliksensis Wormsk.* IUCN Category

Europe: EXTINCT/ENDANGERED
World: ?

ANGIOSPERMAE (Flowering Plants) PRIMULACEAE (Primrose family)

---

SUMMARY: This little Primrose is covered in floury meal, and has 1 to 9 white or lilac flowers on stems to 15 cm tall. It is a plant of the Arctic and far north, and is known from Greenland, Canada, Alaska and the north of Iceland. Unfortunately it is now feared to be extinct in Iceland, as no plants have been seen for 4 years, and the habitat, which is damp coastal meadows, has dried out as a result of human interference.

THREATS: Drying out of habitat.

ACTION PROPOSED:

1. Suitable and former sites of this species should be searched, in case any more plants can be found;
2. If any plants do survive, their sites should be strictly protected from habitat damage, including changes to the water table.

SELECTED REFERENCES:

Einarsson, E. Pers. Comm. 12/1989.

381 Soldanella villosa Darracq

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

PRIMULACEAE (Primrose family)

---

SUMMARY: A very distinctive member of the Primrose family, Soldanella villosa can easily be identified by its small but beautiful lobed violet-coloured flowers on stems about 20 cm tall. It is endemic to the western Pyrenees of France and Spain, where it grows in the foothills, in damp shady places, often under conifers, on siliceous, base-rich soils. In France, the plant is very localised in north Pays Basque, and is protected by law. It is threatened by dessication of its habitat as a result of interference with rivers and streams.

THREATS: Drainage.

ACTION PROPOSED:

1. Protect all remaining sites and local water catchment areas from habitat damage and destruction;
2. Propagate wild origin material for restocking wild populations, if appropriate.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les Plantes Protegees. Regions Pyrenées Aquitaine. La Fédération Française des Sociétés de Protection de la Nature. Neuchatel, Switzerland, Delachaux and Niestlé, Paris. p. 20.
Lesouef, J.Y. (1986). Les Plantes Endemiques et Subendémiques les plus Menacées de France. (Unpublished report). Pp. 10, 11, 200.

Aquilegia bertolonii Schott

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants)

RANUNCULACEAE (Buttercup family)

---

SUMMARY: This small perennial member of the Buttercup family grows to a height of c.30 cm and produces many attractive nodding blue-violet flowers. Its distribution is restricted to southern France and northern Italy, where it is found growing on calcareous rocks between 800 to 1800 m altitude. Very little is known of its population size and ecology.

THREATS: Not known.

ACTION PROPOSED:

1. More field information is needed about this species in order to identify threats and conservation requirements;
2. Where practical, propagate wild origin material for future re-stocking, if appropriate.

SELECTED REFERENCES:

Pignatti, S. et al. (1980). Flora d'Italia,. p.334, 335.

Taxonomic note: Synonym = A. reuteri Boiss.

391 Pulsatilla patens (L.) Miller **IUCN Category**

Europe: **VULNERABLE**
World: ?

ANGIOSPERMAE (Flowering Plants) RANUNCULACEAE (Buttercup family)

---

SUMMARY: The beautiful blue solitary flowers of this plant appear early in Spring, followed later by the divided leaves. Its area of distribution extends across central and north Europe at least as far as the Urals, and includes Finland, the FRG, Hungary and Sweden; related taxa occur in Siberia and North America. The plants grow in open Scots Pine (Pinus sylvestris) forests and in dry, sunny grassland and heaths, sometimes thriving in places subject to human disturbance such as tree-felled areas and the margins of gravel pits. However the species is threatened by collecting and uprooting for horticultural and, in the past, medicinal purposes; by habitat destruction for forestry and the construction of roads, buildings and sandpits; by habitat degradation due to the cessation of pasturing in woodlands and contamination by fertilisers and air pollution. Eutrophication may damage the populations by causing the plants to taste less acrid, thus making them palatable to herbivores. Recently the populations in Gotland have increased. P. patens is widely cultivated, and wild origin material is held in many botanic gardens.

THREATS: Forestry; over-collecting; construction; pollution; changes in agricultural practise.

ACTION PROPOSED:

1. Collecting should be strictly controlled, especially from the more isolated populations, and the use by horticulturalists of artificially propagated material encouraged;
2. Major populations, particularly the more isolated stations, should be protected as nature reserves, and all populations should be protected from habitat damage and destruction, including eutrophication and over-growth of the vegetation;

SELECTED REFERENCES:

Blab, J., Nowak, E., Trautmann, W., and Sukopp, H. (1984). Rote Liste der Gefährdeten Tiere und Pflanzen in der Bundesrepublik Deutschland. Ed.4.

Haeupler, H. and Schönfelder, P. (1988). Atlas der Farn und Blütenpflanzen der Bundesrepublik Deutschland. Stuttgart. map 384.

Jalas, J. and Suominen, J. (Eds)(1972-). Atlas Florae Europaeae: Distribution of vascular plants in Europe. The committee for mapping the Flora of Europe and Societas Biologica Fennica Vanamo, Helsinki. p.100.

Nilsson, Ö. & Gustafsson, L.-A. (1977). Projekt Linne rapporterar 64-79. Svensk Bot. Tidskrift, 73: 1-24.

Rosvall, T. (1986). Sippor. Rindi, 6: 4-22.

Sander, R and Sellin, A. (1986). Ülane, sinilill, karukell. Pääsuke.

Uotila, P. (1969). Ecology and area of Pulsatilla patens (L.) Mill. in Finland. Ann. Bot. Fennici 6: 105-111.

## Ranunculus fontanus C.Presl

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

RANUNCULACEAE (Buttercup family)

---

SUMMARY: R. fontanus is a hairless annual or short-lived perennial to about 30 cm tall, with glossy pale yellow flowers borne singly amongst the leaves in June to August, followed by green spherical fruiting bodies. It is found in Corsica, south Italy, Sicily, Malta and Greece within the area of the Berne convention, and also in Albania and Yugoslavia. In Italy it grows in wet places between 600-1400 m altitude, in (?) Piana del Sele (?), Muro Lucano, Pollino and Sila. In Sicily it grows in the Nebrodi Mountains and in Corsica 2 or 3 stations are know in wet places on the central peaks of Cap Corse. In Greece it grows in marshy places by small streams between 900-1900 m, chiefly in areas with granite or schists, and has been recorded from 4 sites in the north central region and 3 in the north east region. The species is thought to be dependant on disturbance or fluctuations in the water table to maintain the open vegetation in which it thrives. Also, diversion of water draining from mountains could damage the wet habitats on which this species depends.

THREATS: Overgrowth by other plants.

ACTION PROPOSED:

1. Key sites should be identified, protected from habitat damage and destruction, including neglect and drainage or diversion of water.

SELECTED REFERENCES:

Abaucaya, A. Pers. Comm. 5/1990.
Cook, C.D.K. Pers. Comm. 5/1990.
Conservatoir botanique de Porquerolles. Cartogr. Copy from Rouya polgama c. 5 p. on.
IUCN Threatened Plants Committee Secretariat (1982). The rare, threatened and endemic plants of Greece. Ann. Mus. Goulandris, 5: 69-105.
Pignatti, S. et al. (1980). Flora d'Italia. p. 326.
Strid, A. and Papanicolaou, K. (1981). Floristic notes from the mountains of Northern Greece. Nord. J. Bot., 1(1): 66-82.
Strid, A. (1986). Mountain Flora of Greece, 1: 223-224.

355 Reseda decursiva Forssk. IUCN Category

Europe: ENDANGERED
World: ?

ANGIOSPERMAE (Flowering Plants) RESEDACEAE (Mignonette family)

---

SUMMARY: This is an annual to 25 cm tall, with finely divided leaves and pointed inflorescences bearing small white flowers. It grows in North Africa and south-west Asia, but in Europe it is confined to just 2 localities in Spain, near Algeciras in Cadiz Province, and on Cabo de Gata in Almeria Province. The plant's habitat of sandy coastal places makes it particularly vulnerable to the encroachment of nearby tourist developments.

THREATS: Tourism.

ACTION PROPOSED:

1. Establish protected areas for the 2 known localities and ensure that local tourist developments exert no detrimental influence on the plant's survival;
2. Propagate material in cultivation and store seed for future re-introduction, if appropriate.

SELECTED REFERENCES:

Valdes, B. Pers. Comm. 7/1990.

Taxonomic note: Synonym = R. propinqua R.Br.

## Thesium ebracteatum Hayne

IUCN Category

Europe: ENDANGERED
World: ?

ANGIOSPERMAE (Flowering Plants) SANTALACEAE (Sandalwood family)

---

SUMMARY: T. ebracteatum is a perennial plant to 25 cm tall, with narrow leaves and small white and green flowers. Its area of distribution is from Denmark, F.R.G. and Austria to the U.S.S.R., and its habitat is on dry, sunny, sandy soils in grassy areas and open woods. In Denmark, three sites were known in Zealand, but all are now extinct, the last plants having been seen in the 1960s. These losses were due mostly to afforestation, as the original native deciduous woods have been planted with dense Spruce and Beech, under whose dense canopies the Thesium cannot survive. The species is endangered in both Austria and the F.R.G.

THREATS: Forestry; urban development; rubbish dumping.

ACTION PROPOSED:

1. The remaining sites of this species should be strictly protected from all forms of habitat damage and destruction;
2. Cultivated material should be propagated, and seed stored, for future reintroduction if required.

Taxonomic note: Synonym = T. comosum Roth

SELECTED REFERENCES:

Haeupler, H. and Schönfelder, P. (1988). Atlas der Farn und Blütenpflanzen der Bundesrepublik Deutschland. Stuttgart. p. 129.

Jalas, J. and Suominen, J. (Eds) (1972-). Atlas Florae Europaeae: Distribution of Vascular Plants in Europe, vol. 3. The Committee for Mapping the Flora of Europe and Societas Biologica Fennica Vanamo, Helsinki. Map 343.

Lojtnant, B. and Worsoe, E. (1977). Forelobig Status over den Danske Flora. Reports from the Botanical Institute Univ. Aarhus, No. 2. Pp. 181-182.

Lojtnant, B. and Worsoe, E. (1980). Slaegten Thesium (Nalebaeger) - uddod i Danmark? Saertryk af "Flora og Fauna" 86: 65-71.

412 *Saxifraga florulenta* Moretti

IUCN Category

Europe: **VULNERABLE**
World: **VULNERABLE**

**ANGIOSPERMAE (Flowering Plants)** **SAXIFRAGACEAE (Saxifrage family)**

---

SUMMARY: *S. florulenta* is a very desirable and spectacular endemic of the Maritime Alps of France and Italy. This curious but well-studied species takes 10-12 years to reach maturity when it flowers once then dies. Its flesh-pink flowers are borne on a stout hollow stem, about 25 cm tall. *S. florulenta* is a very ancient taxon, thought to be a pre-glacial. As such, it has become taxonomically very isolated from other members of its genus. Its centre of distribution in the Maritime Alps is the large massif known as the Mercantour, where it grows on vertical or over-hanging cliffs of granite and gneiss, usually facing north or northwest, at altitudes of between 1900 to 3290 m. Here, individual plants are slightly sheltered from exposure and snow drifts. Since the last century the plant's populations have been severely reduced by over-collecting, even though (or because) it is notoriously difficult to grow in cultivation. In both Italy and France, collecting is now illegal. Several of the French sites lie within the Parc National des Alpes Maritime.

THREATS: Severe over-collection; uranium mining.

ACTION PROPOSED:

1. Measures to prohibit collecting should be vigorously supported, publicised and enforced;
2. the difficulty of growing this species in cultivation should be advertised more widely to discourage collecting;
3. Protect all remaining sites from habitat damage and destruction.

SELECTED REFERENCES:

Aymonin, G.G. (1988). *Connaitre les Plantes Protégées. Région Méditerranéenne*. La Fédération Française des Sociétés de Protection de la Nature. Neuchatel, Switzerland, Delachaux and Niestlé, Paris. p. 30.
Cathersides. A. (1983). *Saxifraga florulenta* Moretti. Unpublished report, Royal Botanic Gardens, Kew, School of Horticulture. 53 pp.
Filipello, S. and Gardini-Peccenini, S. (1985). In Gomez-Campo, C. (Ed.) *Plant Conservation in the Mediterranean Area*. Pp. 85-86.
Harding, W. (1970). *Saxifrages, the genus Saxifraga in the wild and in cultivation*. Alpine Garden Society, London. Pp. 59, 66.
Lucas, G. and Synge, H. (1978). *The IUCN Plant Red Data Book*. IUCN. pp. 499-500.
Webb, D.A. and Gornall, R.J. (1989). *Saxifrages of Europe*. Helm, London. Pp. 133-135. Pl. 19.

## MARSH SAXIFRAGE

Saxifraga hirculus L. IUCN Category

Europe: ENDANGERED/VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) SAXIFRAGACEAE (Saxifrage family)

---

SUMMARY: The Marsh Saxifrage is a loosely tufted perennial plant reaching 35 cm in height, with leathery, linear leaves and 1 to 4 rather attractive bright yellow flowers, appearing during the period August to October. The species has an arctic-subarctic range, and grows only in soils which are saturated, or well-irrigated. In the far north its habitat is moss-tundra, where plants can be very numerous, but in most of Western Europe the habitat consists of fens and peat bogs which are severely threatened on a large scale by drainage for agricultural gain and forestry. As a result, the species is now rare or threatened in 10 of the 12 Member States in which it grows. Of these, it is already Extinct in 2 (Austria and the Netherlands) and on the verge of extinction in 3 (West Germany, Ireland and Switzerland). It is, however, not considered threatened in Finland, Iceland and Sweden.

THREATS: Peat extraction; drainage for forestry and agricultural 'improvements'; eutrophication. Trampling by botanists.

ACTION PROPOSED:

1. In those countries where the species is threatened, all sites should be protected from all forms of habitat damage and destruction, including interference with the water table. Elsewhere, key sites need protection;
2. Wild origin seed from throughout western Europe should be collected and stored for future re-introduction, as appropriate.

SELECTED REFERENCES:

Alanen, A. Pers. Comm. 1/1990.
Aymonin, G.G. (1988). Connaître les Plantes Protegées. Regions Ouest-nord-est. La Fédération Française des Sociétés de Protection de la Nature. Neuchatel, Switzerland, Delachaux and Niestlé, Paris. p. 40.
Blab, J., Novak, E., Trautmann, W. and Sukopp, H. (1984). Rote Liste der Gefährdeten Tiere und Pflanzen in der Bundesrepublik Deutschland. Ed.4. Greven. p. 145.
Curtis, T.G.F. and McGough, H.N. (1988). The Irish Red Data Book 1: Vascular Plants. Dublin. p. 78.
Hultén, E. and Fries, M. (1986). Atlas of North European Vascular Plants. Koeltz Scientific Books. p. 10.
Lojtnant, B. and Worsoe, E. (1977). Forelobig Status over den Danske Flora. Reports from the Botanical Institute Univ. Aarhus, No. 2. p. 168.
Mennema, J., Quené-Boterenbrood, A.J., and Plate, C.L. (Eds)(1980). Atlas van de Nederlandse Flora. Vol. 1. Utrecht. p. 178.
Niklfeld, H. (1986). Rote Listen Gefährdeter Pflanzen Östereichs. Bundesministeriums für Gesundheit und Umweltschutz. p. 93.
Perring, F.H. and Farrell, L. (1983). British Red Data Books: 1. Vascular Plants, 2nd ed. RSNC. p. 25.
Webb, D.A. and Gornall, R.J. (1989). Saxifrages of Europe. Pp. 39-41.

## 417 *Saxifraga valdensis* DC.

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants) SAXIFRAGACEAE (Saxifrage family)

---

**SUMMARY:** The very small, densely crowded leaf rosettes of *Saxifraga valdensis* which form a high compact cushion give this alpine plant a stone-like appearance. The leaves are small and look pock-marked on account of the lime secreting glands on their surface, and the flowering stems are hairy, reach 11 cm in height, and bear 6 to 12 small white flowers. Its populations are exceedingly few, covering no more than three 3.5 x 5 km squares in the French region of Dauphiné. Its total world population is confined to the Franco-Italian border in the south-western Alps. The habitat of *S. valdensis* is highly specialised: extremely exposed situations, although snow-free, in crevices on vertical calcareous or granitic rock-faces, at altitudes of 1750 to 2800 m. The plant is apparently easy to grow in cultivation.

**THREATS:** Collected locally but minor impact only.

**ACTION PROPOSED:**

1. More field information is required about this plant and the threats to it before conservation action can be planned;
2. Material in cultivation should be propagated and seed stored for future re-introduction, as appropriate.

**SELECTED REFERENCES:**

Aymonin, G.G. (1988). *Connaitre les Plantes Protégées. Région Alpes-Massif Central*. La Fédération Française des Sociétés de Protection de la Nature. Neuchatel, Switzerland, Delachaux and Niestlé, Paris. p. 23.

Olivier, L. Pers. Comm. 6/90

Pignatti, S. (1982). *Flora d'Italia*. p. 528.

Secrétariat de la Faune et de la Flore (1989). *Inventaires de Faune et de Flore: Atlas Préliminaire des Espèces Végétales Protégées du Dauphiné*. Paris. p. 129.

Webb, D.A. and Gornall, R.J. (1989). *Saxifrages of Europe*. Helm, London. Pp. 120, 130-131.

**Linaria flava (Poiret) Desf.**

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) SCROPHULARIACEAE (Foxglove family)

---

SUMMARY: *L. flava* is an annual herb, with whorled leaves and attractive snapdragon-like yellow flowers borne in heads of 1-5. It grows in Corsica and Sardinia, where in the former a few stations occur along the sandy beaches near the towns of Ajaccio, Propriano and Bonifacio. Additional information is needed about its conservation status and needs in Sardinia. Throughout its range, the plant is becoming increasingly vulnerable due to habitat damage caused by tourist pressure.

THREATS: Tourism; trampling.

ACTION PROPOSED:

1. Protect all habitats from damage and destruction;
2. This species should be propagated *ex situ*, and seed stored, for possible re-introduction into the natural habitat.

SELECTED REFERENCES:

Aboucaya, A. Pers. Comm, 5/1990.
Bosc, G. (1988). Notes et Contributions à la flore de Corse III. *Candollea* 43: 389.
Conrad, M. Pers. Comm. 10/1981.
Delfino, C. (Ed.) (1988). *Biotopi dei Sardegna*. Societa botanica Italiana. p. 106.
Gamisans, J. (1985). *Catalogue des plantes vasculaires de la Corse*. Edited by the Parc naturel regional, Ajaccio.
Paradis, G. (1987). *Mondes Plantes* 25: 429-430.
Pignatti, S. *et al.* (1980). *Flora d'Italia*. p. 543.

## 432 *Lindernia procumbens* (Krocker) Philcox

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) SCROPHULARIACEAE (Foxglove family)

---

SUMMARY: This is a small leafy annual plant with tiny pink flowers, seldom opening fully since most are self-pollinating. *Lindernia procumbens* has a large distribution extending across temperate and subtropical Eurasia, and is present in the following 9 Member States: Austria, France, FRG, Hungary, Italy, Portugal (not native), Spain, Switzerland and Turkey. Only in Italy and Turkey is the species not considered to have declined. The plant's habitat, consisting of wet, muddy situations often by rivers has become extremely vulnerable to many forms of disturbance particularly drainage and pollution, like virtually all European wetlands. An additional threat in parts of south-west Europe is competition from *Lindernia dubia*, a North American alien of similar habitats, which can out-compete the native species.

THREATS: Drainage; embankment; habitat destruction; competition from an alien plant relative.

ACTION PROPOSED:

1. In the countries where the species is threatened and native, protect all sites from further habitat damage;
2. Determine the field status of the species in Italy, where little information is available;
3. Propagate the species *ex situ*, and store seed, for possible re-introduction into the natural habitat.

SELECTED REFERENCES:

Ekim, T. *et al*. (1989). *List of Rare, Threatened and Endemic Plants in Turkey*. Turkish Association for the Conservation of Nature and Natural Resources (Serie No. 18). Ankara. p. 220.
Lesouef, J.Y. (1986). Les Plantes Endémiques et subendémiques les plus Menacées de France. (Unpublished report). p. 208.
Malato-Beliz, J. Pers. Comm. 3/1990.
Pignatti, S. *et al*. (1980). *Flora d'Italia*. Pp. 524-525.
von Arx, B., Pers. Comm. 5/1990.

Taxonomic note: Synonyms = *L. pyxidaria* L. pro parte; *L. gratioloides* sensu Hayek, non Lloyd.

Turkey: further investigation is needed (Ekim *et al*. pers comm 26/5/90).

Atropa baetica Willk. IUCN Category

Europe: ENDANGERED
World: ?

ANGIOSPERMAE (Flowering plants) SOLANACEAE (Potato family)

---

SUMMARY: A. baetica is a yellowish-green, hairless perennial, with large oval leaves, yellow-green funnel-shaped flowers, and shiny black berries. It grows in Morocco and southern Spain in the provinces of Cadiz, Almeria, Jaen, Cuenca and Guadalajara. Although the species, which grows in rather inaccessible places, has often been under-recorded in the past, it is now thought to be on the verge of extinction. In Cadiz it is extremely rare, and in the Sierra de Cazorla (Jaen), a recent study revealed only 34 plants growing in 15 different populations, of which 11 comprised only one or two individuals. No young plants were found. The sites were confined to areas between 1350 and 1750 m altitude, subject to cold snowy winters and short, dry summers. The failure of the species to reproduce by seed is thought to be caused mainly by overgrazing, despite the high concentrations of alkaloids present in the plants which provides protection against grazing animals at least in the spring. Although present within the protected area of Coto Nacional de Caza, management there is totally unsuitable for the survival of Atropa baetica. New herbivore species have been introduced in the reserve causing sever over-grazing not just of A.baetica but of other rare and endemic plants too.

Collecting of this plant, which has pharmacological importance, has also lead to its decline, although today it is officially protected from picking by Spanish Royal Decree.

THREATS: Severe over-grazing; low reproductive success; over-collecting.

ACTION PROPOSED:

1. All sites should be protected from grazing in the later months of summer, as a matter of urgency;
2. The stock density in the areas in which it grows should be reduced to levels suitable for the survival of this and other rare plant species in the area;
3. Enforce the prohibition of picking;
4. Propagate material in cultivation and store seed for future re-introduction, if appropriate.

SELECTED REFERENCES:

Barreno, E. (1984). Listado de Plantas Endemicas, Raras o Amenazadas de Espana. Informacion Ambiental, Conservacionismo en Espana, no.3: XIII.
Herrera, C.M. (1987). Distribucion, ecologia y conservacion de Atropa baetica Willk. (Solanaceae) en la Sierra Cazorla. Anales Jard. Bot. Madrid, 43(2): 387-398.
Smythies, W. Pers. Comm. 5/1975.

## MANDRAKE

444 Mandragora officinarum L.

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering plants) SOLANACEAE (Potato family)

---

SUMMARY: The Mandrake is a perennial member of the Potato family, producing large strong-smelling leaves and greenish white flowers, which later develop into yellow berries. The species also produces a large tap-root up to 1 metre long. It is known in the wild only from northern Italy and Yugoslavia, Vulnerable in the former and Rare in the latter. Although a very local plant, the species is suspected to have declined due to over-collecting. Like so mnay members of the Solanaceae family, Mandragora officinarum has medicinal properties, probably due to the presence of alkaloids in the plant. It is used in herbal medicine for skin complaints, as an emetic, purgative and soporific. Much has been documented about the plant in old herbals and elsewhere; the Bible refers to the plant's ability to cure sterility (Genesis xxx. 14-16), while it has many superstitious associations going back to the days of Pliny, when it was used as an anesthetic for operations.

THREATS: Over-collecting?

ACTION PROPOSED: More field information is needed in order to identify the population sizes, ecological requirements and threats before conservation action is proposed.

SELECTED REFERENCES:

Callcott, M. (1842). A scripture herbal. Longman, London. Pp 258-264.
Filipello, S. Pers Comm. 7/1975.
Grieve, M. (1931). A modern herbal. Cape, London. Pp. 510-512.
Mabberley, D.J. (1987). The plant-book. Cambridge University Press, Cambridge. p 354.
Pignatti, S. et al. (1980). Flora d'Italia, 2: 518.

Taxonomic note: Taxonomy follows Flora Europaea. Synonyms = M. acaulis Gaertner; M. vernalis Bertol. Ancient references to Mandrake refer mainly to the genus as a whole, which is still widespread in the Mediterranean.

## WATER CHESTNUT, or WATER CALTROP

449 Trapa natans L. **IUCN Category**

Europe: **VULNERABLE**
World: **NOT THREATENED**

ANGIOSPERMAE (Flowering Plants) TRAPACEAE (Water Chestnut family)

---

SUMMARY: T. natans is an annual plant with tough, 60-100 cm long submerged stems, topped by floating rosettes of deltoid leaves which have inflated stems. The flowers are small and white and appear between June and September, followed by the thorny fruits containing a floury, edible nut. The range of the species is from central, southern, and eastern Europe, across Asia as far as Japan. It is also present in east Africa, and is naturalised in Australia. It has declined drastically throughout Europe, and is close to extinction in the Balearic Is., F.R.G., Greece, Spain, Sweden and Switzerland. It is considered to be Rare in Hungary. Only in France and Italy * does it appear to be under no threat; its status in Austria is Indeterminate, and in Turkey unknown. Its habitat is unpolluted lowland nutrient rich (but not strongly calcareous) water with a muddy bottom and plenty of light, and the widespread threats to this habitat excplain its decline throughout Europe. Water Chestnuts are still eaten in Italy, China and eastern Asia, and the plant is useful for fish breeding and is also an important food source for many aquatic birds. It is also of great scientific interest as a pre-glacial relict in the European Flora, and an important food for people in archaeological times.

mmon
t d
6(90)

THREATS: Pollution; drainage.

ACTION PROPOSED:

1. Protect all remaining sites from destruction and pollution.

Taxonomic note: Not the same as the Chinese Water Chestnut, which is Eleocharis dulcis.

SELECTED REFERENCES:

Hallmann, B. (1981). Note on bird nesting and conservation in some Greek wetlands. I Fusis (Nature - Bulletin of the Hellenic Society for the Protection of Nature.) 25(119): 12-15, 44-48.
Mabberley, D.J. (1987). The Plant-book. Cambridge University Press, Cambridge. p. 12.
Stodola, J. (1983). Kotvice plovouci - Trapa natans L. Stalnicky 1: 29-30.
Tomei, P.E., Amadei, L. and Garbari, F. (1985). Données distributives de quelques angiospermes rare de la region méditerranéenne d'Italie. Atti Soc. Tosc. Sci. Nat., Mem., Serie B, 92: 207-240. (OPTIMA Leaflet 160).

* Italy change status to 'V' (Tomei, Amadei & Garbari 1985). Atti Soc Tosc Sci. Nat. Mem. Ser. B, 92

## REEDMACE

45 Typha minima Funk

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants)

TYPHACEAE (Reedmace family)

---

SUMMARY: T. minima is a slender perennial to about 75 cm tall, with narrow leaves and small flowers in spike-like heads. The female flowers are lower on the head and form a velvety brown cylinder, with the narrower cylinder of male flowers further up the stem. The plants grow in ditches, ponds and marshes, usually on slightly calcareous river-gravels, and are distributed across central Europe, including Austria, France, F.R.G., Hungary, Italy and Switzerland, and also in south and east Turkey. The species is thought to require some disturbance such as regular cleaning of vegetation, or fluctuating water levels, to thrive. It is very rare and little is known about it, but it is known to have declined. In Austria many sites have been lost and the plant is considered in danger of extinction; in F.R.G. there are a few sites in the south of the country; in Italy the plant is still quite widespread (?); in Switzerland the species is legally protected in several cantons.

THREATS: Destruction of habitat. Pollution of water.

ACTION PROPOSED:

1. All sites should be protected from habitat damage and destruction, including water pollution. Steps should be taken to improve water quality at the surviving sites;
2. Material in cultivation should be propagated and seed stored for future reintroductions, if required.

SELECTED REFERENCES:

Cook C.D.K. Pers. Comm. 5/1990.
Landolt, E. (1982). Geschützte Pflanzen in der Schweiz, 3rd Ed. Schweizerischer Bund für Naturschutz, Basel. p. 60.
Lesouef, J.Y. Pers. Comm. 5/1990.
Marciau, R. (1989). Les plantes rares et menacées en Region Rhone-Alpes. Museum Hist. Nat. Grenoble.
Niklfeld, H. (1986). Rote Listen Gefährdeter Pflanzen Östereichs. Bundesministeriums für Gesundheit und Umweltschutz. p. 103.
Pignatti, S. et al. (1980). Flora d'Italia, 2: 634.
von Arx, B., Pers. Comm. 5/1990.

Turkey: v common in Anatolia (Ekim et al. 26/5/90
pers. comm)

## *Typha shuttleworthii* Koch & Sonder

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) TYPHACEAE (Reedmace family)

---

**SUMMARY:** This is a robust perennial to about 150 cm tall, with narrow leaves and small flowers in spike-like heads. The female flowers are lower on the head and form a velvety brown cylinder, topped by the narrower cylinder of male flowers. The plants grow in non-calcareous ditches, ponds and marshes, in south central and southeast Europe, including Austria, France, F.R.G., Hungary, Italy and Switzerland, and in north and east Turkey.

**THREATS:** Destruction of habitat; water pollution.

**ACTION PROPOSED:**

1. All sites should be protected from habitat damage and destruction, including water pollution. Steps should be taken to improve water quality at the surviving sites;
2. Material in cultivation should be propagated and seed stored for future reintroductions, if required.

**SELECTED REFERENCES:**

Lesouef, J.Y. Pers. Comm. 5/1990.
Marciau, R. (1989). *Les plantes rares et menacées en Region Rhone-Alpes*. Museum Hist. Nat. Grenoble.
Niklfeld, H. (1986). *Rote Listen Gefährdeter Pflanzen Östereichs.* Bundesministeriums für Gesundheit und Umweltschutz. p. 103.
Pignatti, S. *et al*. (1980). *Flora d'Italia*, 2: 634.
von Arx, B., Pers. Comm. 5/1990.

Turkey: nt; v common in Anatolia (Ekim *et al*. pers comm. 21/6/90.)

## CREEPING MARSHWORT

455 Apium repens (Jacq.) Lag.

IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) UMBELLIFERAE (Carrot family)

---

SUMMARY: The Creeping Marshwort is a small perennial species, rooting along its stems and producing umbrella-shaped heads of small white flowers. As its common name suggests, the Creeping Marshwort grows in wet places, often streams and muddy ditches containing slightly brackish water. This vulnerable habitat, like so many other European wetlands, has become the repository for herbicide run-off and many other pollutants, while general watercourse "improvements" and widespread drainage operations have all contributed to the rapid disappearance of this wetland plant throughout most of its range. Recorded from no less than 11 Member States, mostly in western and central Europe. Already most of the Dutch and Belgian populations have become Extinct and the plant is considered on the verge of extinction in Austria. An additional threat to the UK populations has been its hybridisation with the closely related, but very widespread, A. nodiflorum (Fool's Watercress), which shares its habitat. The true species persists at only one site in UK, where fortunately it is now protected by law.

Member State distribution: Austria (E), Belgium (E), Denmark (?Ex), France, FRG (E), Hungary (E), Italy, Netherlands (E), Spain (V), Switzerland (E), UK (E).

THREATS: Drainage; clearance and enlargement of ditches and streams; herbicides; under-grazing; hybridisation; oil spillage (UK).

ACTION PROPOSED:

1. In those countries where the species has declined significantly, protect all remaining sites from habitat destruction and degradation, including changes in traditional management;
2. Promote the propagation of wild origin material collected from throughout the range of the species for re-introduction, if appropriate.

SELECTED REFERENCES:

Everett, S. (1986). South England Region rare plant survey report, unpublished. Nature Conservancy Council.
Mooij, R.M. and Weeda, E.J. (1985). Apium repens (Jacq.) Lag. in Zeeuwsch-Vlaanderen teruggevonden. Gorteria, 12: 210-215.
Niklfeld, H. (1986). Rote Listen Gefährdeter Pflanzen Östereichs. Bundesministeriums für Gesundheit und Umweltschutz. p. 39.

Taxonomic note: Synonym = Helosciadium repens (Jacq.) Koch according to Flora Europaea.

Erynglum alpinum L. IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flowering Plants) UMBELLIFERAE (Carrot family)

---

SUMMARY: This beautiful and very distinctive alpine plant, c.80 cm tall, produces heads of bluish flowers surrounded by a blue ruff of feathery and softly spiny bracts. The plant can be found growing in alpine meadows and gorges amongst bushes and pines at 1500 to 2500 m altitude in the Alps, Jura and the mountains of Yugoslavia, including Austria, France, Italy and Switzerland. One of the plant's charateristics is that its flowers rotate with the movement of the sun throughout the day. In Italy, the species is already on the verge on the extinction. In France and Switzerland it has also become Vulnerable, although now protected from picking by national law. In the Dauphiné region of France, at least 18 sites occur in in the Parc National des Ecrins, but all but one of the region's sites outside this protected area have been lost. Throughout its range, the plant is generally over-collected, because it is highly sought after for dried flower arrangements.

THREATS: Over-collecting.

ACTION PROPOSED:

1. Vigorously enforce the existing laws protecting this species;
2. Wild origin material from throughout the plant's range should be propagated, and seed stored, for local re-introductions if appropriate and to help reduce pressure by collectors on the wild populations.
3. Promote the use of artificially propagated material by the dried flower industry.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les plantes protegees. Region Alpes-massif central. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p.26.
Filipello, S. and Gardini-Peccenini, S. (1985), In Gomez-Campo, C. (Ed.) Plant Conservation in the Mediterranean Area. p.75.
Landolt, E. (1982). Geschutzte Pflanzen in der Schweiz, 3rd Ed. Schweizerischer Bund fur Naturschutz, Basel. p.167.
Niklfeld, H. (1986). Rote Listen Gefahrdeter Pflanzen Ostereichs. Bundesministeriums fur Gesundheit und Umweltschutz. p.61.
Pignatti, S. et al. (1980). Flora d'Italia, 2: 176.
Secretariat de la Faune et de la Flore (1989). Inventaires de faune et de flore: Atlas preliminaire des especes vegetales protegees du Dauphine. Paris. p.65.

## BRITTANY ERYNGO

463 Eryngium viviparum Gay

IUCN Category

Europe: **ENDANGERED**
World: **ENDANGERED**

ANGIOSPERMAE (Flowering Plants) UMBELLIFERAE (Carrot family)

---

SUMMARY: The eryngos are a group of distinctive plants with sharply spined leaves. Eryngium viviparum is a small biennial species, with small greenish flowers, and is confined to France (Brittany), northern Portugal (around Porto) and Spain (north-west Galicia and Léon). In Brittany the plant probably survives at few more than ten localities. Its habitat is a highly endangered one throughout Europe: damp pastures, in depressions which are subject to winter flooding. The sites are vulnerable to the direct effects of developments such as deforestation etc., but also to the abandonment of traditional grazing or mowing practices, leading to invasion by tall vegetation in which Eryngium viviparum cannot survive. The species is in cultivation at the "Conservatoire Botanique de Brest", Brittany, Fance, but it is not easy to grow. It is protected from picking and uprooting under French law.

THREATS: Changes in agricultural practice; urban and industrial development; afforestation; land drainage; trampling.

ACTION PROPOSED:

1. Promote the continuation of traditional grazing practices in the remaining localities and prevent drainage operations and subsequent urban development or modern afforestation projects;
2. Wild origin material should if possible be cultivated and the seeds stored in order to replenish the wild populations, if appropriate.

SELECTED REFERENCES:

Annezo, N. and Malengreau, D. (1985). Plantes menacees du Massif Armoricain. Conservatoire Botanique De Brest.
Aymonin, G.G. (1988). Connaitre les plantes protegees. Regions Ouest-nord-est. Neuchatel, Switzerland, Delachaux and Niestle, Paris, La federation Francaise des societes de protection de la nature. p.34.
Barreno, E. (Ed.) (1984). Listado de Plantas Endemicas, Raras o Amenazadas de Espana. Informacion Ambiental, No. 3.
Lesouef, J.Y. (1986). Les Plantes Endemiques et subendemiques les plus Menacees de France. Unpublished report.
Malato-Beliz, J. Pers. Comm. 3/1990.

# BALEARIC CASTAWAY

Naufraga balearica Constance & Cannon

IUCN Category

Europe: ENDANGERED
World: ENDANGERED

ANGIOSPERMAE (Flowering Plants)

UMBELLIFERAE (Carrot Family)

---

Summary: This small compact perennial herb with pinnate leaves was only described in 1967 from the island of Mallorca in the Balearic Islands, to which it is endemic. It grows at the base of mountain cliffs on the south coast of Mallorca in two adjacent localities, covering an area of about 10 sq. metres.

It is not related to any other European or Mediterranean member of its family and its nearest relatives are probably to be found in the southern hemisphere, hence its scientific name implying that it is shipwrecked in the Balearics. Because of its isolation and probable ancient origin, it is of great scientific importance.

Little is known about the biology of the species but it is probably pollinated by ants and possibly ant-dispersed.

The Balearics Castaway is threatened because of its sspecialised habitat and very restricted area. The drought of recent years has further prejudiced its survival chances. Collection should be prohibited and the whole area made into a minireserve.

THREATS: Specialised habitat and extremely restricted area make it vulnerable to fortuitous disturbance and drought.

ACTION PROPOSED:

1. Prohibit collection;
2. Establish the entire area as a "minireserve";
3. Investigate the ecology of the species to improve our knowledge of its conservation requirements;
4. Increase cultivated stocks and stored seed for possible re-introduction, if appropriate.

SELECTED REFERENCES:

Gomez-Campo, C. (Ed.) (1987). Libro Rojo de Especies vegetales amenazadas de Espana peninsular e Islas Baleares. Pp. 450-451.
Duvigneaud, J. (1969). Ecologie de Naufraga balearica Const. et Cannon (Umbelliflorae). Bull. Soc. Roy. Bel., 103:31.
Lucas, G. and Synge, H. (1978). The IUCN Plant Red Data Book. IUCN. pp. 531-532
Snogerup, S. (1985). The Mediterranean Islands. In Gomez-Campo, C. (Ed.) (1985). Plant Conservation in the Mediterranean Area. Pp:159-173.

V. Heywood (based upon Gomez-Campo's RDB)

## ELB WATER DROPWORT

468 Oenanthe conioides Lange* IUCN Category

Europe: ENDANGERED
World: ENDANGERED

ANGIOSPERMAE (Flowering Plants) UMBELLIFERAE (Carrot family)

---

SUMMARY: Endemic to the Federal Republic of Germany, this plant is known only from the valley of the Lower Elbe and tributaries between Zollenspieder/Howe near Hamburg and Gluckstadt in Schleswig-Holstein. It grows with other tall wetland plants in riverside wetlands dependent upon a special flooding regime.

The cone-flowered water dropwort has declined in all its locations and is primarily threatened by dyking and deepening of the River Elbe. This activity has eliminated flooding necessary for the survival of this endangered plant. Embankment of many tidal rivers with resulting disturbances and fragmentation of remaining Oenanthe populations has caused futher declines.

Four nature reserves have been established but the largest remaining population of 200 plants at Moorburg is threatened by harbour extension works.

It is known from a total of sites distributed within a region of km. Altogether, there may be less than plants left growing in the wild. Only % of the total population is adequately protected in nature reserves.

THREATS: It is primarily threatened by dyking and deepening of the River Elbe, which has eliminated the flooding necessary for the plant's survival. Further declines have been caused by the embankment of many tidal rivers, which results in the disturbance and fragmentation of remaining Oenanthe populations. The largest remaining population, of 200 plants at Moorburg, is threatened by harbour extension works.

ACTION PROPOSED:

1. Prevent further damage to the habitat, including changes to the hydrology;
2. Bulk up cultivated material for possible re-introduction back to the wild, if appropriate.

SELECTED REFERENCES:

Blab, J., Novak, E., Trautmann, W., and Sukopp, H. (1984). Rote Liste der Gefährdeten Tiere und Pflanzen in der Bundesrepublik Deutschland. 4th Ed. Greven. P 142.
Herms, R. (1975/76). Okologisches Gutachten Vedel-Haseldorfer Marsch. Hamburg. 36-38.
Poppendieck, H. Pers. Comm. 1982.
Sukopp, H. Pers. Comm. 7/1976.
Sukopp, H. Pers. Comm. 3/1981.

Rouya polygama (Desf.) Coincy IUCN Category

Europe: VULNERABLE
World: ?

ANGIOSPERMAE (Flowering Plants) UMBELLIFERAE (Carrot family)

SUMMARY: This rather inconspicuous perennial grows to about 30 tall, and has divided leaves and umbrella-shaped heads of small white flowers. It is known from maritime sands on Corsica and Sardinia, and is also present in North Africa. In Corsica, a few sites are known, on stabilised beaches in the south, by the Porto-Vecchio Gulf on the west coast. The plants of these populations have become less abundant as a result of tourism. The species is protected under French law.

THREATS: Construction; trampling; tourism.

ACTION PROPOSED:

1. All sites should be protected from habitat damage and destruction;
2. Wild origin material should be increased in cultivation and seed stored, for future reintroduction if required.

SELECTED REFERENCES:

Aboucaya, A. Pers. Comm. 5/1990.
Bocquet, G. Pers. Comm. 11/1977.
Conrad, M. Pers. Comm, 3/1990.
Conservatoire Botanique de Porquerolles Cartographie de l'inventaire des plantes rares et menacées de Corse. Unpublished report, 1981.
Gamisans, J. (1985). Catalogue des plantes vasculaires de la Corse. Edited by the Parc naturel regional, Ajaccio.
Pignatti, S. et al. (1980). Flora d'Italia, 2: 246.

Taxonomic note: Synonym = Thapsia polygama Desf.

471 Thorella verticillatinundata (Thore) Briq IUCN Category

Europe: **VULNERABLE**
World: **VULNERABLE**

ANGIOSPERMAE (Flowering Plants) UMBELLIFERAE (Carrot family)

---

SUMMARY: This is a slender perennial to 20 cm tall, with divided leaves and umbrella-shaped heads of tiny whitish flowers. It forms a low carpet in marshes, fens and other seasonally flooded places on acid soils, and is known only from France and Portugal. It is intolerant of competition if the surrounding vegetation becomes overgrown, and of shade, dessication and eutrophication. In France many sites have been lost, but the plant is known to persist to the south of Bordeaux and to the west of Nantes. Although this species is inconspicuous and easily over-looked, the genus includes only one species and is therefore of taxonomic interest. The habitat type is extremely fragile, and has suffered from the effects of drainage and development throughout Europe.

THREATS: Drainage; development; pollution; under-grazing.

ACTION PROPOSED:

1. The French sites should be declared nature reserves and carefully managed to maintain the populations of Thorella;
2. More field information is needed about the Portuguese sites and the threats to them before action can be planned;
3. Propagate wild collected stocks for the augmentation of the wild populations if necessary.

Taxonomic note: Synonym = Ptychotis thorei Godron & Gren.

SELECTED REFERENCES:

Aymonin, G.G. (1988). Connaitre les Plantes Protegées. Regions Ouest-nord-est. La Fédération Française des Sociétés de Protection de la Nature. Neuchatel, Switzerland, Delachaux and Niestlé, Paris. p. 33.
Lesouef, J.Y. (1986). Les Plantes Endemiques et Subendémiques les plus Menacées de France. Unpublished report.
Malato-Beliz, J, . Pers. Comm. 3/1990.

Centranthus trinervis (Viv.) Beguinot

**IUCN Category**

**Europe: VULNERABLE**
**World: VULNERABLE**

**ANGIOSPERMAE (Flowering Plants)**

**VALERIANACEAE (Valerian family)**

---

SUMMARY: This is a perennial Valerian with grey-blue leaves and heads of small pink flowers, which grows in rock crevices, and is known only from Sardinia and Corsica. In Sardinia, only two populations survive, one of which grows on Monti di Oliena, in the east-central part of the island, on north or north-east facing calcareous rocks. The plants occur on calcareous rocks whose habitat deserves protection from the possibilities of tourist developments. Although the Corsican populations, confined to Monte della Trinita, contain no more than around 100 plants in total, they do not appear to be under immediate threat. Their size, however, renders them exceedingly susceptible to extinction should their sites be disturbed or individual plants removed by collectors. The species occupies an isolated position within the genus and is of interest for the study of plant evolution. Plants of this species are in cultivation in the Botanic Garden of Lyons.

THREATS: ? Tourism; over-collecting.

ACTION PROPOSED:

1. All sites should be protected from habitat damage and destruction;
2. Propagate wild collected stocks for the reinforcement of the wild populations if appropriate.

SELECTED REFERENCES:

Aboucaya, A. Pers. Comm. 5/1990.
Bocquet, G. Pers. Comm. 11/1977.
Conrad, M. Pers. Comm. 10/1981 and 3/1990.
Corrias, B. Pers. Comm. 10/1989.
Corrias, B. (1978). Le Piante Endemiche Della Sardegna: 26. Centranthus trinervis (Viv.) Beg. Boll. Soc. Sarda Sci. Nat., 17: 253-257.
Filipello, S. Pers. Comm. 2/1977.
Gamisans, J. (1985). Catalogue des plantes vasculaires de la Corse. Edited by the Parc naturel regional, Ajaccio.

Taxonomic note: Synonym = Centranthus nervosus Moris.

477 Viola delphinantha Boiss.

IUCN Category

Europe: VULNERABLE
World: VULNERABLE

ANGIOSPERMAE (Flovering Plants) VIOLACEAE (Pansy family)

---

SUMMARY: This is a handsome plant, a small perennial to about 10 cm tall, with narrow leaves and long stems bearing pinkish or reddish-purple flowers. It grows in Bulgaria and Greece, on calcareous rocks and vertical cliffs. Small populations are known on Mount Helmos, Mount Falakro (near Drama) and Mount Orvilos (Drama), and larger populatons on Mount Pangeo, Mount Athos and Mount Olympus. The species is of value as a horticultural plant, and a member of a related group of Violets (including Viola cazorlensis) which are of great phytogeographical interest.

THREATS: Over-collecting.

ACTION PROPOSED:

1. Collecting should be strictly controlled, and the use by horticulturalists of artificially propagated material encouraged.